13-8-2021	By hand
Environmental Protection Department	
Environmental Assessment Division	
Metro Assessment Group	
Kowloon Section (2)	
27th floor, Southorn Centre,	
130 Hennessy Road,	
Wan Chai, Hong Kong	
(Attn: Mr. TANG Ho Him, Matthew)	
Dear Mr. TANG,	
Contract No. EDO 2/2020 Environmental Monitoring Works for Contract No. ED/2018/05 – Kai Tak Development – Stage 5B Infra Former North Apron Area Submission of Monthly EM&A Report for July 2021 (Version 1.1)	astructure Works at the
I refer to the Environment Permit (EP) No. EP-337/2009 and EP-445/2013/A for the captioned project.	
Pursuant to Condition 3.3 of the EP-337/2009 and Condition of the 3.2 of the EP-445/2013/A, please find and one electronic copy of Monthly EM&A Report for July 2021 (Version 1.1), which has been verified by	
Thank you very much for your attention and please feel free to contact Mr. Lee at 2618 2166 should you	ı require further information.
Yours faithfully,	
For and on behalf of	
Ka Shing Management Consultant Limited	
AKCL	
Applied knowledge center limited	

Encl. Monthly EM&A report for July 2021 (Version 1.1)

**Company Secretary** 





Website: www.acuityhk.com



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





Date: 12 August 2021

Your ref:

Our ref: PL-202108017

**AECOM Asia Company Limited** 12/F, Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, New Territories, Hong Kong

Attn.: Mr. LEUNG Man Kit, CRE

Dear Mr. Leung,

Re: Agreement No. EDO 6/2019

Independent Environmental Checker for Contract No. ED/2018/05 Kai Tak **Development – Stage 5B Infrastructure works at the Former North Apron Area Verification of Monthly EM&A Report (July 2021)** 

Reference is made to the Monthly EM&A Report (July 2021) (Version 1.1) provided by the Environmental Team on 12 August 2021.

Please be informed that we have no adverse comment on the captioned submission. We hereby verify the Monthly EM&A Report (July 2021) in accordance with Condition 3.3 of Environmental Permit No. EP-337/2009.

Thank you for your attention.

Yours sincerely, For and on behalf of Acuity Sustainability Consulting Limited

Kevin Li

Independent Environmental Checker

Attn.: Mr. Kinox Wong By email CEDD c.c. Attn.: Mr. Chan Pang (ETL) Ka Shing By email

# **Environmental Monitoring and Audit Report for**

Contract No. ED/2018/05 –

Kai Tak Development – Stage 5B infrastructure works at the former north apron area

Contract No.: EDO 2/2020

July 2021

(Version 1.1)

Certified By:

(Environmental Team Leader)

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# **EXECUTIVE SUMMARY**

1. This is the 6<sup>th</sup> Monthly Environmental Monitoring & Audit (EM&A) report which summaries the findings of the EM&A Programme during the reporting period from 1 to 31 July 2021.

# **Breaches of Action and Limit Levels**

- 2. 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
- 3. 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
- 4. Construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
- 5. Summary of the non-compliance in the reporting month for the Project is tabulated in Table I.

Table I Non-compliance Record in the Reporting Month

Parameter	No. of Ex	Action Taken	
Parameter	Action Level	Limit Level	Action Taken
1-hr TSP	0	0	N/A
24-hr TSP	0	0	N/A
Construction noise	0	0	N/A

#### **Complaint log**

6. One complaint was received in the reporting month. Summary of complaints in the reporting month is tabulated in Table II.

Table II Summary of complaints in the Reporting Month

Date of complaint	Date of	Description of	Recommendations /	Close-out
received	compliant	complaint	Action take	date / Status
15 July 2021	8 & 12 July 2021	Contractor received complaint via email from EPD (Case no. K19/RE/00016046-21 And K19/RE/00016240- 21) on 15 July 2021.	Recommendations: 1. Covering excavated material fully with green net at all-time except during working process; 2. Covering excavated	30 July 2021

Date of complaint	Date of	Description of	Recommendations /	Close-out
received	compliant	complaint	Action take	date / Status
		Details of Complaint:  1. Complaint of dust from the construction site of stage 5B Infrastructure Works near Sung Wong Toi MTR Station affecting nearby pedestrians and residents.  2. Please ensure the work fulfill the relevant environmental legislations and their subsidiary regulations.  3. Please take necessary measures to minimize the environmental nuisance arising from the construction site.	slope with green net/pouring concrete; 3. Routine water spraying by water jet and water truck for the main haul road and the area that water sprinkler system was not covered.  Action taken 1. As per the Contractor, water mist cannon was applied to Road L16 to enhance the control of dust emission	

# Notifications of summons and successful prosecutions

7. No notification of summons and successful prosecutions was received in the reporting month. Summary of summons and successful prosecutions in the reporting month is tabulated in Table III.

Table III Summary of summons and successful prosecutions in the Reporting Month

Date of receiving notification of summons or prosecutions	Date of event	Description of event	Action taken	Close-out date / Status
No notification of summons	NA	NA	NA	NA
and successful prosecutions				
were received in				
the reporting month.				

## **Report changes**

8. There was no reporting change in the reporting month.

#### **Key construction works in the reporting month**

- 9. Major construction activities undertake during the reporting month included:
  - Trial pit excavation
  - Advance works for traffic diversion at Sa Po Road
  - Bored pile works for landscape elevated walkway
  - Instrumentation installation at SB-01
  - Pre-drilling work for S14
  - Drainage works for Pedestrian Street No.1, No.2 & No.3
  - Construction of Crowd Dispersal Route
  - Removal existing piles at Road D1
  - Rising main construction

#### **Future key issues**

10. The future key issues and potential impact in the coming month are given in Table IV.

Table IV Summary of future key issues and potential impact in the coming month

Future key issues in the coming month	Potential impact
Advance works for traffic diversion at Sa Po Road	Noise and Air Quality
Bored pile works for landscape elevated walkway	Noise and Air Quality
Pre-drilling work for S14	Noise and Air Quality
Drainage works for Pedestrian Street No. 1, No. 2 & No.3	Noise and Air Quality
Construction of Crowd Dispersal Route	Noise and Air Quality
Rising main construction	Noise and Air Quality
Sheetpile installation for launching shaft of SB-01	Noise and Air Quality

# 1. INTRODUCTION

# **Project Background**

- 1.1 The Kai Tak Development (KTD) is located in the southern part of Kowloon Peninsula of the HKSAR, comprising the apron and runway areas of the former Kai Tak Airport and existing waterfront areas at To Kwa Wan, Ma Tau Kok, Kowloon Bay, Kwun Tong and Cha Kwo Ling.
- 1.2 Contract No. ED/2018/05 Kai Tak Development stage 5B infrastructure works at the former north apron area (The Project), comprises mainly the design and construction of a section of dual two-lane Road D1; single two-lane Road L9 and Road L16; a single-lane slip road S14; a pedestrian subway SB-01; an elevated walkway LW-02; renovation of the existing pedestrian subways KS9, KS10 and KS32, as well as modification of the southern end of the existing pedestrian subway KS10; associated footpaths, street lighting, traffic aids, drainage, sewerage, water mains, landscaping, electrical and mechanical works, and ancillary works. The proposed works are shown in Figure 1 and Figure 2. The proposed works and site boundary are shown in Figure 3 and Figure 4. Civil Engineering and Development Department (CEDD) had completed an Environmental Impact Assessment (EIA) and is the Permit Holder.
- 1.3 In accordance with the approved EIA Reports, Environmental Monitoring and Audit (EM&A) programmes are recommended to ensure compliance with the EIA study recommendations. The project proponent was the Civil Engineering and Development Department (CEDD). AECOM Asia Co. Ltd. (AECOM) was commissioned by CEDD as Supervisor (act as Engineers' Representative (ER) listed in EM&A Manual). Acuity Sustainability Consulting Limited (Acuity) was commissioned as the Independent Environmental Checker (IEC). Build King STEC Joint Venture (Build King) was appointed as the main Contractor for the construction works of Contract No. ED/2018/05. Ka Shing was commissioned by CEDD to undertake the role of the Environmental Team (ET) to implement the EM&A programme for The Project.
- 1.4 The construction work under ED/2018/05 comprises the EM&A Manual (EIA Register No. AEIAR-130/2009 for Kai Tak Development) and Environmental Permit No. EP- 337/2009.
- 1.5 Air quality and noise monitoring has been proposed in the EM&A Manual with EIA Register No. AEIAR-130/2009 for Kai Tak Development.

# **Project Organization**

1.6 The project organization chart and with respect to the EM&A programme is shown in AppendixA. Information of key personnel contact names and telephone numbers are summarized in Table1.1.

Table 1.1 Contact Information of Key Personnel

Party	Role	Contact Person	Position	Phone No.	Fax No.
Civil Engineering and	Project	Mr. George Ng	Senior Engineer	3842 7107	3842 7107
Development Department (CEDD)	Proponent	Mr. Kinox Wong	Engineer	3842 7137	3842 7137
AECOM Asia Co. Ltd. (AECOM)	Supervisor (act as Engineers' Representative (ER) listed in EM&A Manual)	Mr. Leung Wai Kit	CRE	2412 3410	2798 0783
Acuity Sustainability Consulting Limited (Acuity)	Independent Environmental Checker (IEC)	Mr. Kevin Li	IEC	2698 6833	2698 9383
Ka Shing Management Consultant Limited (Ka Shing)	Environmental Team (ET)	Ir. Chan Pang	ET Leader	2618 2166	2120 7752
Build King – STEC Joint Venture (BK- STEC)	Contractor	Mr. Raymond Lam	Environmental Officer	9713 6817	3850 8508

# **Works Area and Construction Programme**

1.7 The construction works commenced on 16 February 2021. The construction programme of the Project is given in Appendix B.

# Construction works undertaken during reporting month

1.8 Major construction works of the Project in the reporting month are summarized in Table 1.2:

Table 1.2 Major activities of the Project during reporting month

Trial site and site in	Drainage works for Pedestrian Street No.1, No.2
Trial pit excavation	& No.3
Advance works for traffic diversion at Sa Po Road	Construction of Crowd Dispersal Route
Bored pile works for landscape elevated	Demoved evicting piles at Dood D1
walkway	Removal existing piles at Road D1
Instrumentation installation at SB-01	Rising main construction
Pre-drilling work for S14	

# **Submission Status under the Environmental Permits**

1.9 The status of required submission under Environmental Permit (EP) conditions under EP-337/2009 are summarized in Table 1.3.

Table 1.3 Summary of Status of Required Submission of EPs

EP Condition EP-337/2009	Submission	Submission Date
Condition 1.11	Notification of Commencement Date of Construction of the Project	12 Jan 2021
Condition 2.3	Management Organization of Main Construction Companies	21 Sep 2020
Condition 2.4	Design Drawings	12 Jan 2021
Condition 2.11	Landscape Mitigation Plans	17 Dec 2020
Condition 3.2	Baseline Monitoring Report	12 Jan 2021
Condition 3.3	Monthly EM&A Report (June 2021)	13 July 2021

# 2. AIR QUALITY MONITORING

#### **Monitoring Requirements**

2.1 In accordance with EM&A Manual (EIA Register No. AEIAR-130/2009), impact air quality monitoring shall be carried out during the construction phase of the Project. For regular impact monitoring, a sampling frequency of at least once in every six days will be strictly observed at all of the monitoring stations for 24-hour TSP. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six days will be undertaken when the highest dust impact occurs.

#### **Monitoring Locations**

2.2 Two designated monitoring stations were selected for air quality monitoring programme. Impact air quality monitoring was conducted at two air quality monitoring stations in the reporting month. Table 2.1 describes the air quality monitoring locations, which are also depicted in Figure 5.

Table 2.1 Locations of Air Quality Monitoring Stations

Air Quality Monitoring Locations for the Project	Location of Measurement
AM2(A) – Ng Wah Catholic Secondary School	Rooftop
AM3 – Sky Tower	Podium floor near T7

#### **Monitoring Parameters, Frequency and Duration**

2.3 The air quality monitoring locations and monitoring frequency are listed in Table 2.2.

Table 2.2 Air Quality Monitoring Parameters, Frequency and Duration

Air Monitoring Station	Location for Measurement	Parameter Duration Frequency
AM2(A) – Ng Wah Catholic Secondary School	Rooftop	- 24-hour average TSP - 24 hours - Once every days
AM3 – Sky Tower	Podium Floor near Tower 7	- 1-hour - 1 hour - Three time every 6 days

- 2.4 The monitoring schedule for reporting month and next month is presented in Appendix C.
- 2.5 Photographic records of the impact monitoring setup are shown in Appendix D.

#### **Monitoring Equipment**

2.6 24-hour average TSP and 1-hour average TSP levels were measured for impact monitoring. 24-hour average TSP levels were measured by the High Volume Samplers (HVS) and 1-hour average TSP levels were measured by direct reading method to indicate short-term impacts. Wind data monitoring equipment was set up at conspicuous locations for logging wind speed and wind direction near to the dust monitoring locations. Table 2.3 summarizes the equipment to be used in the air quality monitoring.

Table 2.3 Air Quality Monitoring Equipment

Equipment	Model	Quantity	Calibration Interval
HVS Sampler	TE-5170 X c/w of TSP sampling inlet	2	2 months
HVS Calibrator	TISCH TE-5025A	1	1 year
1-hour TSP Dust TSI Model AM510 SidePak Personal Aerosol Meter Monitor		3	1 year
Weather Station	Davis Vantage Pro2 Weather Station	1	6 months

- 2.7 High volume samplers (HVS) (TE-5170 X c/w of TSP sampling inlet) comprising with appropriate sampling inlets were employed for 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).
- 2.8 Calibration certificates, catalogue of equipment are given in Appendix E.

#### Monitoring Methodology and QA/QC Procedure

#### 24-hour TSP Monitoring

#### Operating/Analytical Procedures

2.9 Setup criteria of HVS are shown as follows:

- A horizontal platform with appropriate support to secure the samplers against gusty wind was provided.
- No two samplers were placed less than 2m apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2m of separation from walls, parapets and penthouses was set for the rooftop samples.
- A minimum of 2m separation from any supporting structure, measured horizontally was set.
- No furnaces or incineration flues was nearby.
- Airflow around the sampler was unrestricted.
- Any wire fence and gate, to protect the samplers, was not caused any obstruction during monitoring.
- Permission were obtained to setup the samplers and to obtain access to the monitoring stations.
- A secured supply of electricity was provided to operate the samplers.
- 2.10 Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 m<sup>3</sup>/min. and 1.7 m<sup>3</sup>/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
- 2.11 For TSP sampling, Glass Fiber Filter Media 8" x 10" having a collection efficiency of > 99 % for particles of 0.3  $\mu$ m diameter were used.
- 2.12 The power supply was checked to ensure the sampler worked properly and then placed any filter media at the designated air monitoring station.
- 2.13 The filter holding frame was removed by loosening the four nuts and a weighted and conditioned filter was carefully centered with the stamped number upwards, on a supporting screen.
- 2.14 The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure was sufficient to avoid air leakage at the edges.
- 2.15 The shelter lid was closed and secured with the aluminium strip.
- 2.16 The timer was programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper

can be found out by using the filter number).

2.17 After sampling, the filter was removed from the HVS and put into a clean and labeled seal plastic bag to avoid cross contamination. The elapsed time was also be recorded. The sampled filters were sent to the HOKLAS accredited or other internationally accredited laboratory for weighting.

#### Maintenance/Calibration

- 2.18 The following maintenance/calibration are required for the HVS:
  - The HVS and their accessories were properly maintained. Appropriate maintenance such
    as routine motor brushes replacement and electrical wiring checking were made to ensure
    that the equipment and necessary power supply are in good working condition.
  - High volume samplers were calibrated with at bi-monthly intervals using TE-5025A
     Calibration Kit throughout all stages of the air quality monitoring.

#### 1-hour TSP Monitoring

#### Measurement Procedures

- 2.19 The measurement procedures of the 1-hour TSP were conducted in accordance with the Manufacturer's Instruction Manual as follows:
  - Set up the dust meter on a tripod at 1.2m level.
  - Turned on the dust meter and check the battery, if too low, change new ones. Pointed the meter to the source area or the planned measurement area.
  - The zero calibration of the instrument was conducted before and after each sampling.
  - TSP levels were recorded for 1-hour with 5-minute data logging interval.
  - Recorded down the general meteorological conditions, Test ID no., start/end time, spot check reading at each sampling location for data processing.
  - Recorded any activities that may generate dust during measurement period.

#### Maintenance/Calibration

- 2.20 The following maintenance/calibration are required for the direct dust meters:
  - To validate the accuracy of dust meter, compare the results measured by dust meter and HVS every 12 months throughout all stages of the air quality monitoring.

#### **Wind Data Monitoring**

- 2.21 Wind Anemometer was installed at the roof-top of AM2(A) Ng Wah Catholic Secondary School with 10m above ground and clear of constructions or turbulence caused by the buildings.
- 2.22 The wind data was captured by a data logger and the data was downloaded at least once per month for analysis.
- 2.23 The wind data monitoring equipment will be re-calibrated at least once every six months.
- 2.24 Wind direction is divided into 16 sectors of 22.5 degrees each.
- 2.25 Details of weather information during the monitoring period are shown in Appendix F.

#### **Action and Limit Levels**

2.26 The Action and Limit Levels of 24-hour average TSP and 1-hour average TSP are summarized in Table 2.4 and Table 2.5 respectively.

Table 2.4 Action and Limit Levels of 24-hour average TSP for Construction Dust Monitoring

		<u> </u>	•	<u> </u>
	Doromator	Air Monitoring	Action Level,	Limit Level,
	Parameter	Station	$\mu g/m^3$	$\mu g/m^3$
	24-hour average TSP	AM2(A)	175	260
		AM3	172	260

*Table 2.5 Action and Limit Levels of 1-hour average TSP for Construction Dust Monitoring* 

Parameter	Parameter Air Monitoring Station		Limit Level, µg/m³
1-hour average TSP	AM2(A)	302	500
	AM3	301	500

#### **Impact Air Quality Monitoring results**

2.27 Impact monitoring results for 24-hour average TSP and 1-hour average TSP levels at the designed air quality monitoring stations are summarized in Table 2.6 and Table 2.7 respectively.

Table 2.6 Summary of 24-hour average TSP Monitoring Data during the reporting month

Air Monitoring Station	Average TSP Concentration, µg/m <sup>3</sup>	Range, μg/m <sup>3</sup>	Action Level, µg/m <sup>3</sup>	Limit Level, μg/m <sup>3</sup>
AM2(A)	49	38-83	175	260
AM3	49	29-98	172	260

<u>Table 2.7 Summary of 1-hour average TSP Monitoring Data during the reporting month</u>

Air Monitoring Station	Average TSP Concentration, µg/m <sup>3</sup>	Range, µg/m <sup>3</sup>	Action Level, μg/m <sup>3</sup>	Limit Level, μg/m <sup>3</sup>
AM2(A)	45	32-82	302	500
AM3	43	22-98	301	500

- 2.28 There was no Action and Limit Level exceedance of 24-hour average TSP and 1-hour average TSP levels recorded during the reporting month.
- 2.29 Graphical presentation and detailed monitoring results of 24-hour average TSP and 1-hour average TSP levels are shown in Appendix G and Appendix H respectively.
- 2.30 The Event and Action Plan is provided in Appendix I.
- 2.31 Non-project related construction activities in the adjacent construction sites were observed during the reporting period and may affect the monitoring results.
- 2.32 Weather conditions during the monitoring periods were generally fine and did not affect the monitoring results.

# 3. NOISE MONITORING

## **Monitoring Requirements**

- 3.1 In accordance with EM&A Manual (EIA Register No. AEIAR-130/2009), impact noise monitoring shall be carried out during the construction phase of the Project.
- 3.2 Regular monitoring,  $L_{Aeq, 30-minute}$ , for each station will be on a weekly basis and conduct one set of measurements between 0700 1900 hrs on normal weekdays.
- 3.3 If construction works are extended to include works during 1900 0700 hrs as well as public holidays and Sundays, additional weekly impact monitoring will be carried out during the respective restricted hours periods.

#### **Monitoring Locations**

3.4 Two designated monitoring stations were selected for noise monitoring programme. Impact noise monitoring was conducted at two noise monitoring stations in the reporting month. Table 3.1 describes the noise monitoring locations, which are also depicted in Figure 6.

*Table 3.1 Locations of Noise Monitoring Stations* 

Noise Monitoring Locations for the Project	Location of Measurement
M4(A) – Le Billionnaire	Podium (Façade)
M5(A) – Prince Ritz	Podium (Façade)

#### **Monitoring Parameters, Frequency and Duration**

3.5 The noise monitoring locations and monitoring frequency are listed in Table 3.2.

Table 3.2 Noise Monitoring Parameters, Frequency and Duration

Noise Monitoring Station	Location for Measurement	Parameter	Frequency and Duration
M4(A) – Le Billionnaire	Podium (Façade)	I I and	30-minute measurement at each monitoring station between 0700
M5(A) – Prince Ritz	Podium (Façade)	$L_{ m Aeq}$ , $L_{ m A10}$ and $L_{ m A90}$	- 1900 hrs on normal weekdays (Monday to Saturday) at frequency of once per week.

- 3.6 The monitoring schedule for reporting month and next month is presented in Appendix C.
- 3.7 Photographic records of the monitoring setup are shown in Appendix D.

# **Monitoring Equipment**

3.8 As referred to the Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO), sound level meters in compliance with the IEC 61672-1 (Type 1) standard [this standard replaced the International Electrotechnical Commission Publications 60651:1979 (Type 1) and 60804:1985 (Type 1)] were used for noise monitoring. Table 3.3 summarizes the equipment to be used in the noise monitoring.

Table 3.3 Noise Monitoring Equipment

Equipment	Model	Quantity	Calibration Interval
Sound Level Meter	RION NL52	1	1 year
Sound Level Calibrator	RION NC 75	1	1 year
Air Flowmeter	TSI TA440 Air Velocity	1	1 year

3.9 Calibration certificates, catalogue of equipment are given in Appendix J.

#### Monitoring Methodology and QA/QC Procedure

3.10 The noise level measurement was conducted at 1m from the exterior of the nearby noise sensitive receivers building façade and at 1.2m above the ground and facing to the source area or the planned measurement area.

- 3.11 No noise measurement was conducted in the presence of fog, rain, wind with a steady speed exceeding 5 m/s or wind with gusts exceeding 10 m/s. Air flow was measured by air flow meter.
- 3.12 Turned on the sound level meter and check the battery, if too low, change new ones.
- 3.13 Calibration was conducted immediately prior to and after each noise measurement, the accuracy of the sound level meters was checked by using sound calibrator generating 1,000 Hz with 94dB. Measurement data was found to be valid only if the calibration levels from before and after the noise measurement agreed to within 1.0 dB.
- 3.14 Noise level was recorded.
- 3.15 Recorded any activities that may generate noise during measurement period.

#### **Maintenance and Calibration**

- 3.16 The microphone of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.
- 3.17 The sound level meter and sound calibrator were calibrated annually.
- 3.18 Calibration for sound level meter was conducted immediately prior to and following each noise measurement by using sound calibrator generating a known sound pressure level at a known frequency (1,000 Hz with 94dB). Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

#### **Action and Limit Levels**

3.19 The Baseline Noise Levels and Action and Limit Levels for construction noise is presented in Table 3.4.

Table 3.4 Baseline Noise Level and Action and Limit Levels for Construction Noise Monitoring

Time Period	Noise Monitoring Station	Baseline Noise Levels, dB (A)	Action Level	Limit Level ^
0700 – 1900 hrs	M4(A)	69.5	When one	75 ID(A)
on normal weekdays	M5(A)	72.5	documented complaint is received.	75 dB(A)

Note: ^ If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

# **Impact Noise Monitoring results**

3.20 Impact noise monitoring results at the designated noise monitoring stations are summarized in Table 3.5 respectively.

Table 3.5 Summary of Noise Monitoring Data during the reporting month

Noise Monitoring Station	Measured L <sub>Aeq, 30-</sub> min, Average, dB(A)	$\begin{array}{c} \text{Measured $L_{Aeq,30$-}$} \\ \text{min,} \\ \text{Range, $dB(A)$} \end{array}$	Action Level	Limit Level ^
M4(A)	69.4	69.1 – 69.7	When one documented	75
M5(A)	72.3	71.7 – 72.8	complaint is received	dB(A)

Note: ^ If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

- 3.21 There was no Action and Limit Level exceedance of  $L_{Aeq, 30-min}$  recorded during the reporting month.
- 3.22 Graphical presentation and detailed monitoring results are shown in Appendix K.
- 3.23 The Event and Action Plan is provided in Appendix L.
- 3.24 Non-project related construction activities in the adjacent construction sites were observed during the reporting period and may affect the monitoring results.
- 3.25 Weather conditions during the monitoring periods were generally fine and did not affect the monitoring results.

# 4. COMPARISON OF EM&A RESULTS WITH EIA PREDICTIONS

4.1 The environmental impacts predictions were given in Agreement No. CE 35/2006(CE) Kai Tak Development Engineering Study cum Design and Construction of Advance Works - Investigation, Design and Construction - Kai Tak Development Environmental Impact Assessment Report, EIA Register No. AEIAR-130/2009 for Kai Tak Development (The EIA Report). The EM&A data was compared with the EIA predictions as summarized in Table 4.1 to Table 4.3.

Table 4.1 Comparison of 24-hour average TSP Monitoring Data with EIA predictions

Air Monitoring Station	ASR No. in EIA report	Maximum 24-h	Cumulative our average TSP ntration Scenario 2 (Mid 2013 to Late 2016), µg/m³	Measured 24-hr average TSP in Reporting Month (July 2021) µg/m³
AM2(A) - Ng Wah Catholic Secondary School	NA	NA	NA	38-43
AM3 - Sky Tower	A40^	106^	138^	29-98

Note:

Table 4.2 Comparison of 1-hour average TSP Monitoring Data with EIA predictions

Air Monitoring Station	ASR No. in EIA report	Maximum 1-ho	Cumulative our average TSP ntration Scenario 2 (Mid 2013 to Late 2016), µg/m³	Measured 1-hr average TSP in Reporting Month (July 2021) µg/m <sup>3</sup>
AM2(A) - Ng Wah Catholic Secondary School	NA	NA	NA	32-82
AM3 - Sky Tower	A40^	217^	247^	22-98

Note:

<sup>^</sup> Prediction results are given in the Table 3.13 of the EIA report EIA Register No. AEIAR-130/2009 for Kai Tak Development.

<sup>^</sup> Prediction results are given in the Table 3.13 of the EIA report EIA Register No. AEIAR-130/2009 for Kai Tak Development.

*Table 4.3 Comparison of Noise Monitoring Data with EIA predictions* 

Noise Monitoring Station	NSR No. in EIA report	Predicted Mitigated Construction Noise Levels during Normal Daytime Working Hour LAeq, 30min, dB(A)	Measured Noise Level in Reporting Month (Jun 2021) L <sub>Aeq, 30min</sub> , dB(A)
M4(A) – Le Billionnaire	NA	NA	69.1 – 69.4
M5(A) – Prince Ritz	NA	NA	71.7 – 72.8

- 4.2 No prediction in the EIA Report for 24-hour TSP monitoring results at AM2(A).
- 4.3 24-hour TSP monitoring results at AM3 was recorded lower than the prediction in the EIA Report.
- 4.4 No prediction in the EIA Report for 1-hour TSP monitoring results at AM2(A).
- 4.5 1-hour TSP monitoring results at AM3 was recorded lower than the prediction in the EIA Report.
- 4.6 No prediction in the EIA Report for noise monitoring results at M4(A) and M5(A).

# 5. LANDSCAPE AND VISUAL MONITORING

5.1 In accordance with EM&A Manual (EIA Register No. AEIAR-130/2009), Landscape and Visual Monitoring shall be carried out during the construction phase of the Project. Regular impact monitoring will be conducted at least once per week.

#### **Results and Observations**

- 5.2 Site inspections were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site.
- 5.3 Site inspections were conducted on 8, 14, 21 and 29 July 2021 in the reporting month.
- 5.4 The summary of site audits is attached in Table 5.1.

Table 5.1 Summary of observations of Landscape and Visual impact during the reporting month

Inspection Date	Key Observations	Recommendations / Actions	Close-out Date / Status
8 July 2021	No	NA	NA
14 July 2021	No	NA	NA
21 July 2021	No	NA	NA
29 July 2021	No	NA	NA

- 5.5 No non-compliance of the landscape and visual impact was recorded in the reporting month.
- 5.6 Should non-compliance of the landscape and visual impact occur, action in accordance with the action plan presented in Appendix M shall be performed.

# 6. ENVIRONMENTAL SITE INSPECTION AND AUDI

# **Site Inspection**

- 6.1 Site inspections were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site.
- 6.2 Site inspections were conducted on 8, 14, 21 and 29 July 2021 in the reporting month.
- 6.3 The summaries of site audits are attached in Table 6.1.

Table 6.1 Summary of site inspections observations during the reporting month

10000 011 500	table 0.1 Summary of site inspections observations during the reporting month				
Inspection Date	Key Observations	Recommendations / Actions	Close- out Date / Status		
8 July 2021	Observation: Secondary container should be provided for the diesel drum to prevent soil contamination @bored pile area.	Action Taken: Secondary container had been provided for the diesel drum to prevent soil contamination @bored pile area.	Closed out on 14 July 2021		
14 July 2021	Observation: Waste should be stored in a covered location in LW02.	Action Taken: Waste had been stored in a covered location in LW02.	Closed out on 21 July 2021		

Inspection Date	Key Observations	Recommendations / Actions	Close- out Date / Status
14 July	Observation: Water inlet cap was missed with water safety barriers in LW02.	Action Taken: Water inlet cap had been provided with water safety barriers in LW02.	Closed out on 21 July 2021
14 July 2021	Observation: Stockpiles should be fully covered by impermeable sheeting to reduce dust emission in TS1.	Action Taken: Stockpiles had been covered by impermeable sheeting.	Closed out on 21 July 2021
21 July 2021	Observation: Stockpiles should be fully covered by impermeable sheeting to reduce dust emission in TS1.	Action taken: Stockpiles had been covered by impermeable sheeting.	Closed out on 29 July 2021

Inspection Date	Key Observations	Recommendations / Actions	Close- out Date / Status
29 July	Observation: Secondary container shall be provided for the diesel drum to prevent soil contamination @ bored pile area.	Action Taken: Secondary container had been removed. @ bored pile area.	Closed out on 5 Aug 2021
2021	Observation: The vehicles restricted to maximum speed of 10KM per hour poster should be display in L16.	Action Taken: The vehicles restricted to maximum speed of 10KM per hour poster had been display in L16.	Closed out on 5 Aug 2021

# **Status of Waste Management**

- 6.4 The amount of wastes generated by the major site activities of the work contracts within the Project during the reporting month is shown in Appendix N.
- 6.5 The Contractor was registered as a chemical waste producer for the Project. The Contractor was reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

## Status of Environmental Licenses, Notification and Permits

6.6 A summary of the relevant permits, licenses and/or notifications on environmental protection for the Project is shown in Table 6.2.

Table 6.2 Summary of Environmental Licenses, Notifications and Permits

Environmental Licenses, Notifications and Permits	Ref. No.	Valid Form	Valid Till
Environmental Permit under EIAO	EP-337/2009	23 Apr 2009	N/A
Construction Dust Notification under APCO	HA/1826/1	29 Dec 2020	N/A
Waste Disposal Billing Account	7038086	21 Aug 2020	N/A
Registration as a Chemical Waste Producer	5111-286-B2596-01	15 Sep 2020	N/A
Wastayyatan Disahanga Lisanga undan	WT00037618-2021		
Wastewater Discharge License under WPCO	WT00037370-2021	15 July 2021	31 July 2026
WICO	WT00038562-2021		
Construction Noise Permit	GW-RE0434-21	4 May 2021	25 Oct 2021

#### **Implementation Status of Environmental Mitigation Measures**

6.7 The Contractor has implemented environmental mitigation measures and requires as stated in the EIA report, the EP and the EM&A Manual. The implementation status of the mitigation measures is summarized in Appendix O.

#### **Environmental Complaint and Non-compliance**

6.8 One complaint was received in the reporting month. Summary of complaints in the reporting month is tabulated in Table 6.3.

Table 6.3 Summary of complaints in the Reporting Month

Date of complaint	Date of compliant	Description of	Recommendations	Close-out
received	Date of Compitant	complaint	/ Action taken	date / Status
15 July 2021	8 & 12 July 2021	Contractor received complaint via email from EPD (Case no. K19/RE/00016046-21 And K19/RE/00016240-21) on 15 July 2021. Details of Complaint: 1. Complaint of dust from	Recommendations: 1. Covering excavated material fully with green net at all-time except during working process; 2. Covering excavated slope with green	30 July 2021

Date of complaint received	Date of compliant	Description of complaint	Recommendations / Action taken	Close-out date / Status
		the construction site of stage 5B Infrastructure Works near Sung Wong Toi MTR Station affecting nearby pedestrians and residents. 2. Please ensure the work fulfill the relevant environmental legislations and their subsidiary regulations. 3. Please take necessary measures to minimize the environmental nuisance arising from the construction site.	net/pouring concrete; 3. Routine water spraying by water jet and water truck for the main haul road and the area that water sprinkler system was not covered.  Action taken 1. As per the Contractor, water mist cannon was applied to Road L16 to enhance the control of dust emission	

6.9 Complaint log is shown in Appendix P.

# Notifications of summons and successful prosecutions

6.10 No notification of summons and successful prosecutions was received in the reporting month. Summary of summons and successful prosecutions in the reporting month is tabulated in Table 6.4.

Table 6.4 Summary of summons and successful prosecutions in the Reporting Month

Date of receiving notification of summons or prosecutions	Date of event	Description of event	Action taken	Close-out date / Status
No notification of summons and successful prosecutions were received in the reporting month.	NA	NA	NA	NA

6.11 The summaries of cumulative environmental complaint, warning, summon and notification of successful prosecution for the Project is presented in Appendix P.

#### 7. FUTURE KEY ISSUES

#### **Construction Programme in the coming month**

7.1 The major construction activities and potential impacts in the next reporting month as follows:

Table 7.1 Summary of future key issues and potential impact in the coming month

Future key issues in the coming month	Potential impact
Advance works for traffic diversion at Sa Po Road	Noise and Air Quality
Bored pile works for landscape elevated walkway	Noise and Air Quality
Pre-drilling work for S14	Noise and Air Quality
Drainage works for Pedestrian Street No. 1, No. 2 & No.3	Noise and Air Quality
Construction of Crowd Dispersal Route	Noise and Air Quality
Rising main construction	Noise and Air Quality
Sheetpile installation for launching shaft of SB-01	Noise and Air Quality

- 7.2 The mitigation measures for environmental impact including Air Quality, Construction Noise, Water Quality, Chemical and Waste Management, Landscape and Visual shall be implemented:
  - Sufficient watering of the works site with the active dust emitting activities,
  - Limitation of the speed for vehicles on unpaved site roads,
  - Properly cover the stockpiles,
  - Good maintenance to the plant and equipment,
  - Use of quieter plant and Quality Powered Mechanical Equipment (QPME),
  - Provide movable noise barriers,
  - Appropriate desilting/ sedimentation devices provided on site for treatment before discharge,
  - Well maintain the drainage system to prevent the spillage of wastewater during heavy rainfall,
  - Onsite waste sorting and implementation of trip ticket system,
  - Good management and control on construction waste reduction,
  - Erection of decorative screen hoarding,
  - Strictly following the Environmental Permits and Licenses, and
  - Provide sufficient mitigation measures as recommended in Approved EIA Reports.
- 7.3 The recommended environmental measures proposed in the EM&A Manual (EIA Register No. AEIAR-130/2009) shall be effectively implemented to minimize the potential environmental impacts. The Contractor is reminded to implement the mitigation measures properly.

# **Environmental Site Inspection and Monitoring Schedule for next month**

7.4	The tentative schedule for weekly site inspection and air quality and noise monitoring in the next month is provided in Appendix C.

# 8. CONCLUSIONS

- 8.1 Environmental monitoring works were performed in the reporting month and all monitoring results were checked and reviewed.
- 8.2 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
- 8.3 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
- 8.4 Construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.
- 8.5 No complaint was received in the reporting month.
- 8.6 No notification of summons and successful prosecutions was received in the reporting month.
- 8.7 Based on the site inspection and audits, impact air quality and noise monitoring results, it was considered that the mitigation measures were effective to control the potential environmental impacts from the Project during the reporting period.

# Figure

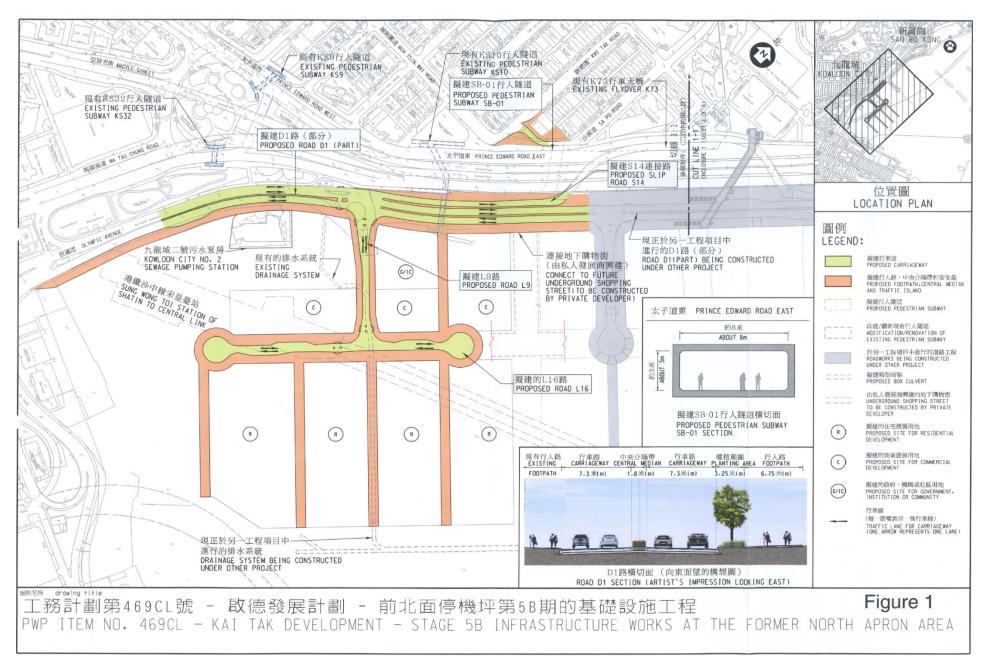


Figure 1 – Proposed works of Contract No. ED/2018/05

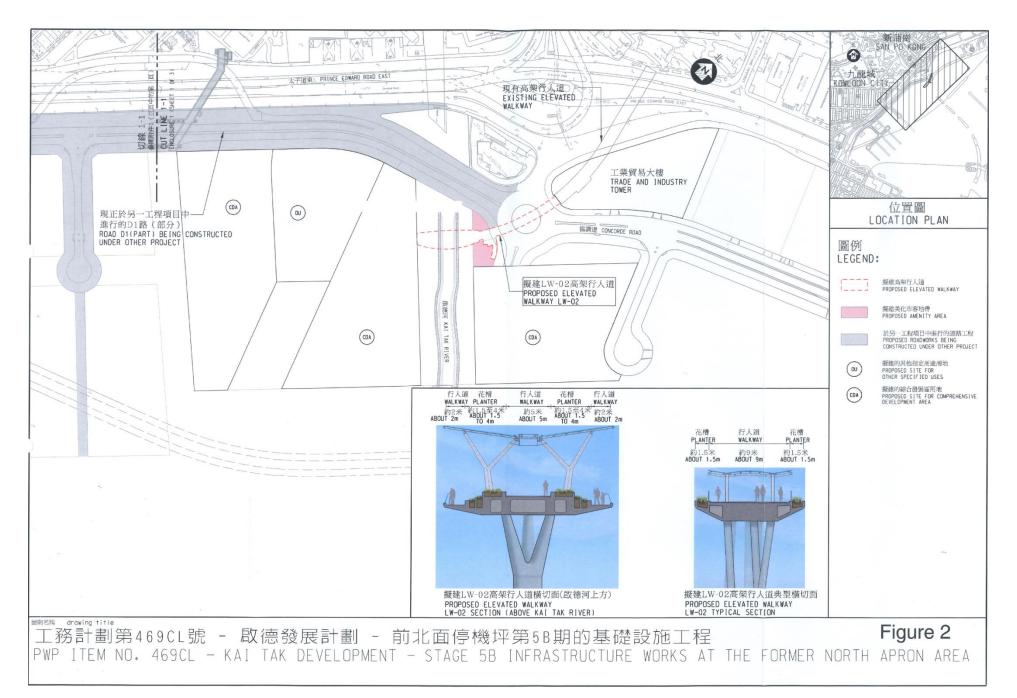


Figure 2 – Proposed works of Contract No. ED/2018/05

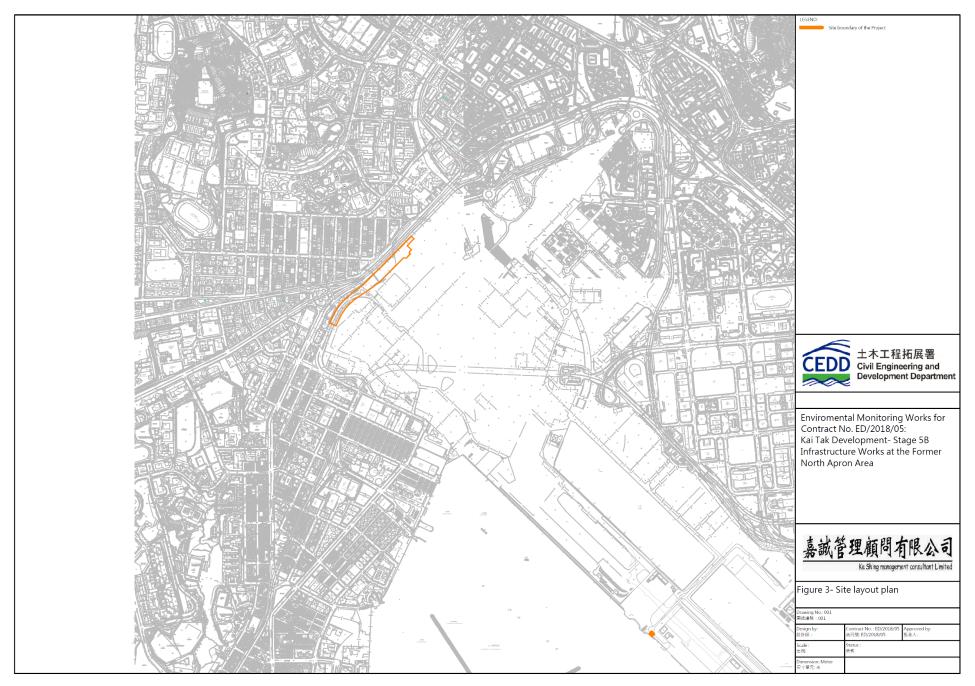


Figure 3 – D1 Road Site Layout Plan

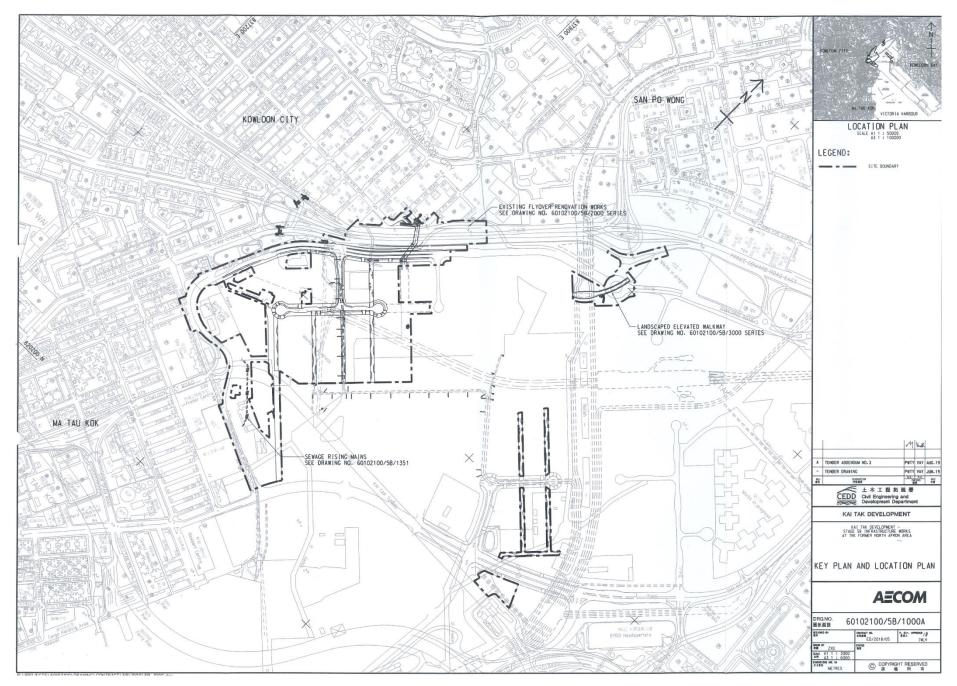


Figure 4 – Site Layout Plan

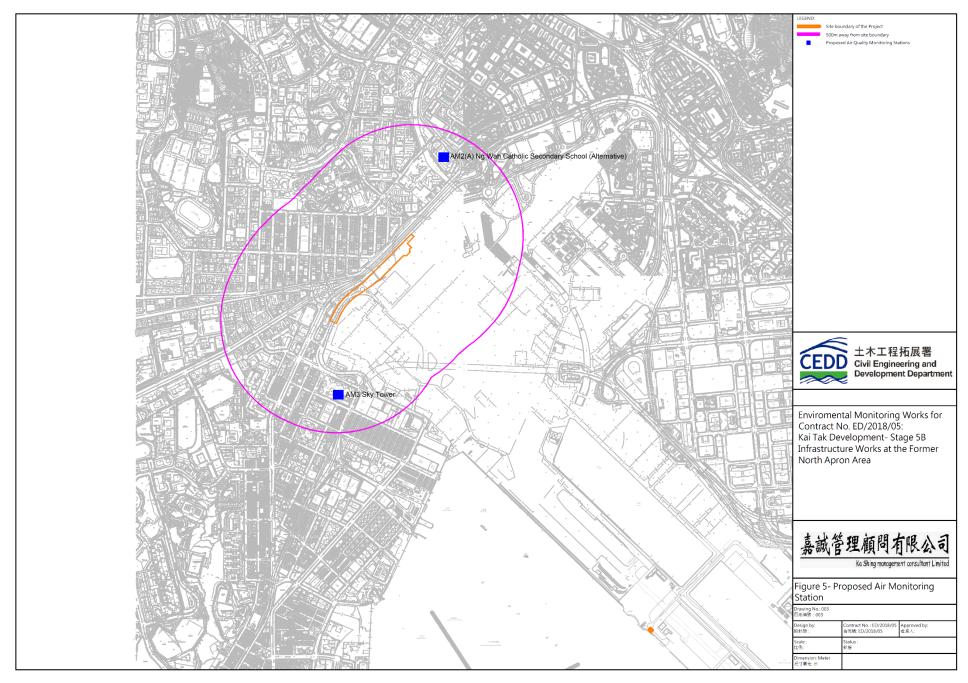


Figure 5 – Air Quality Monitoring Stations

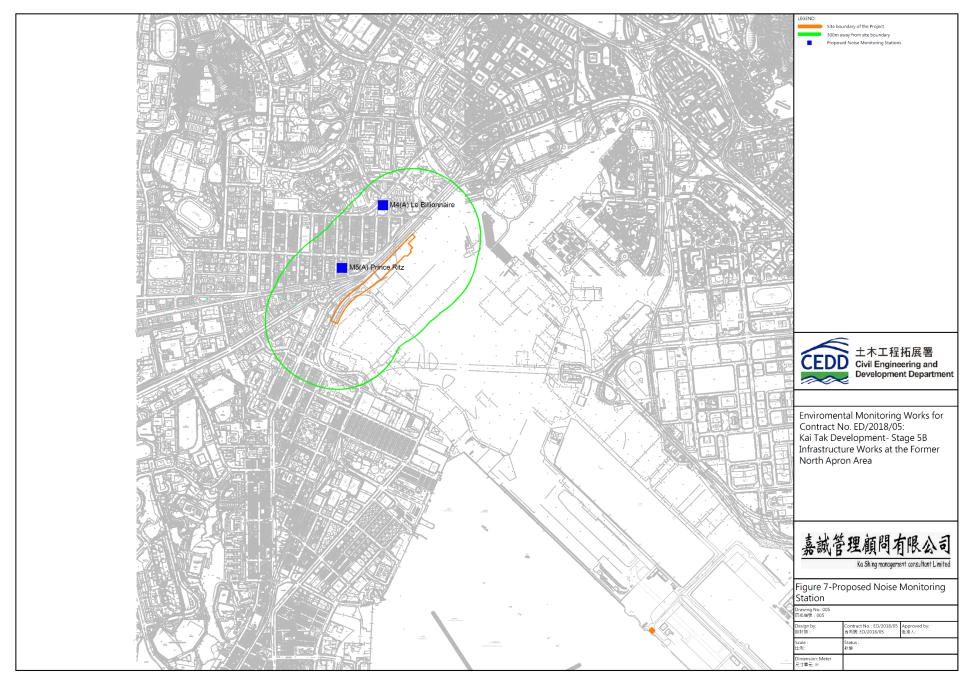
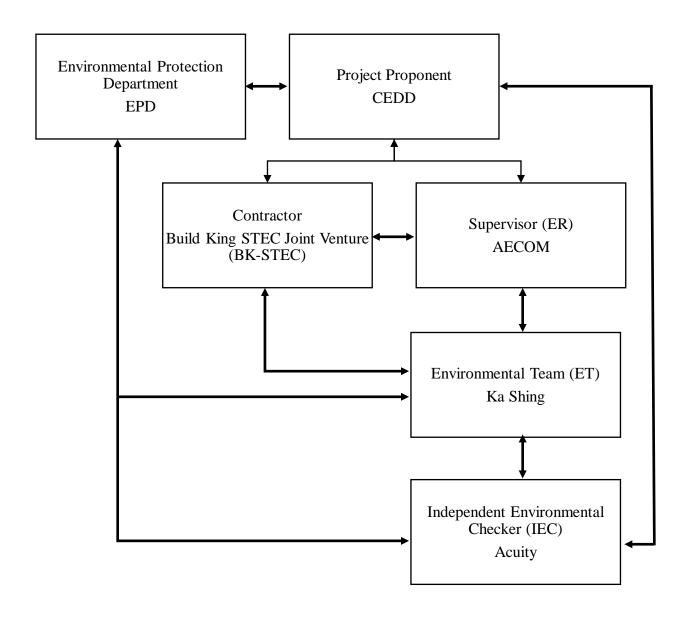


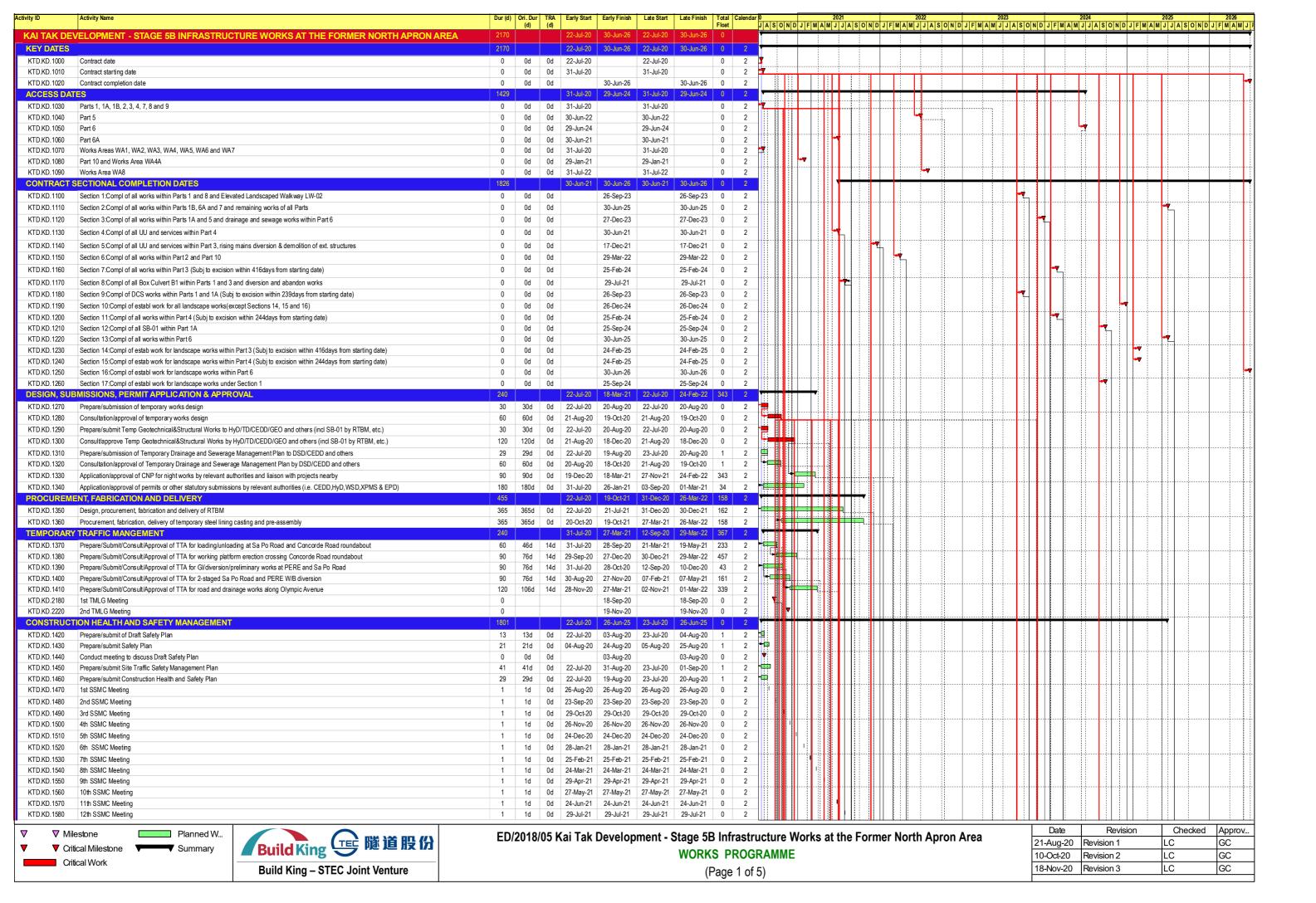
Figure 6 – Noise Monitoring Stations

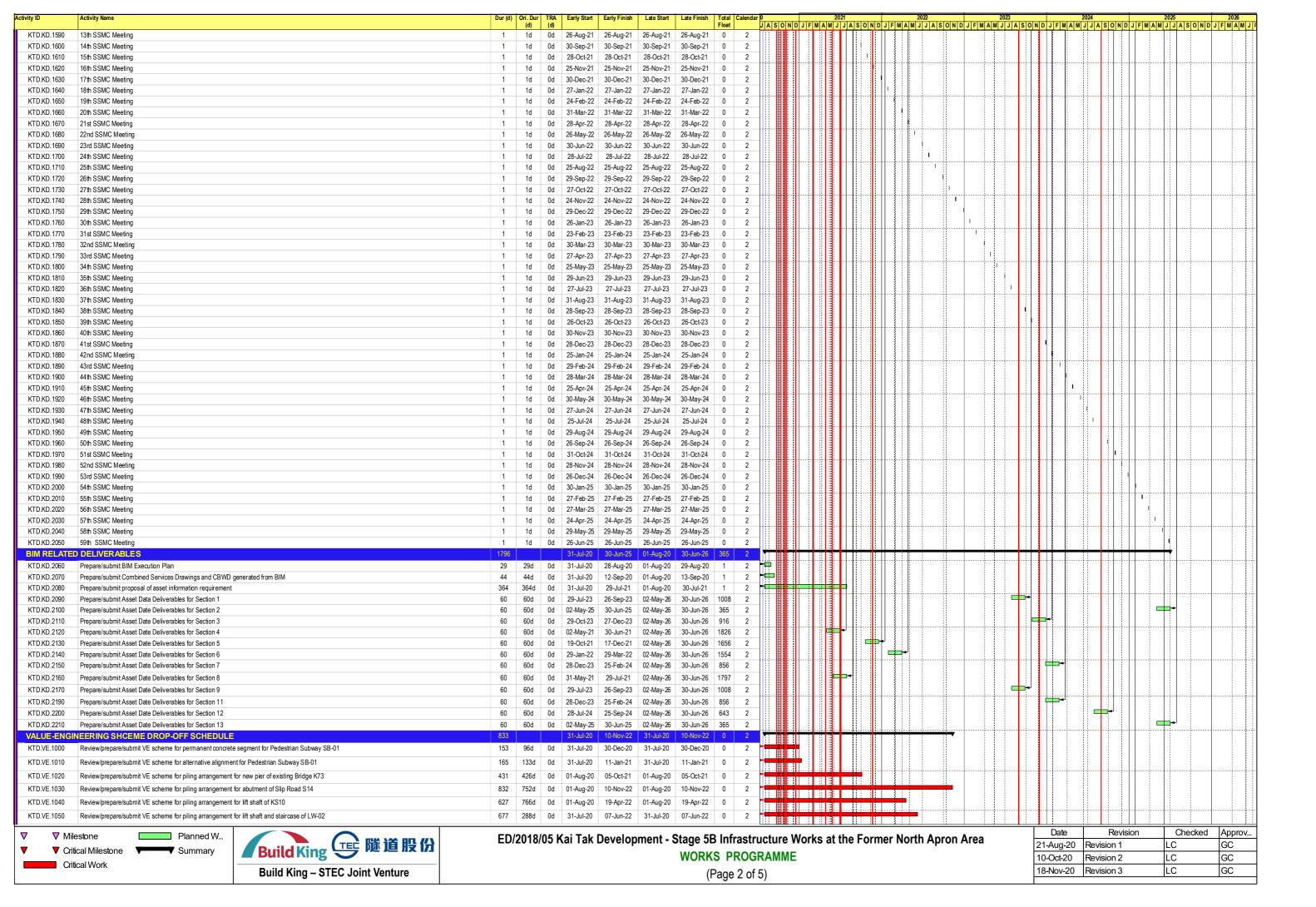
# Appendix A – Organization Chart of EM&A Team

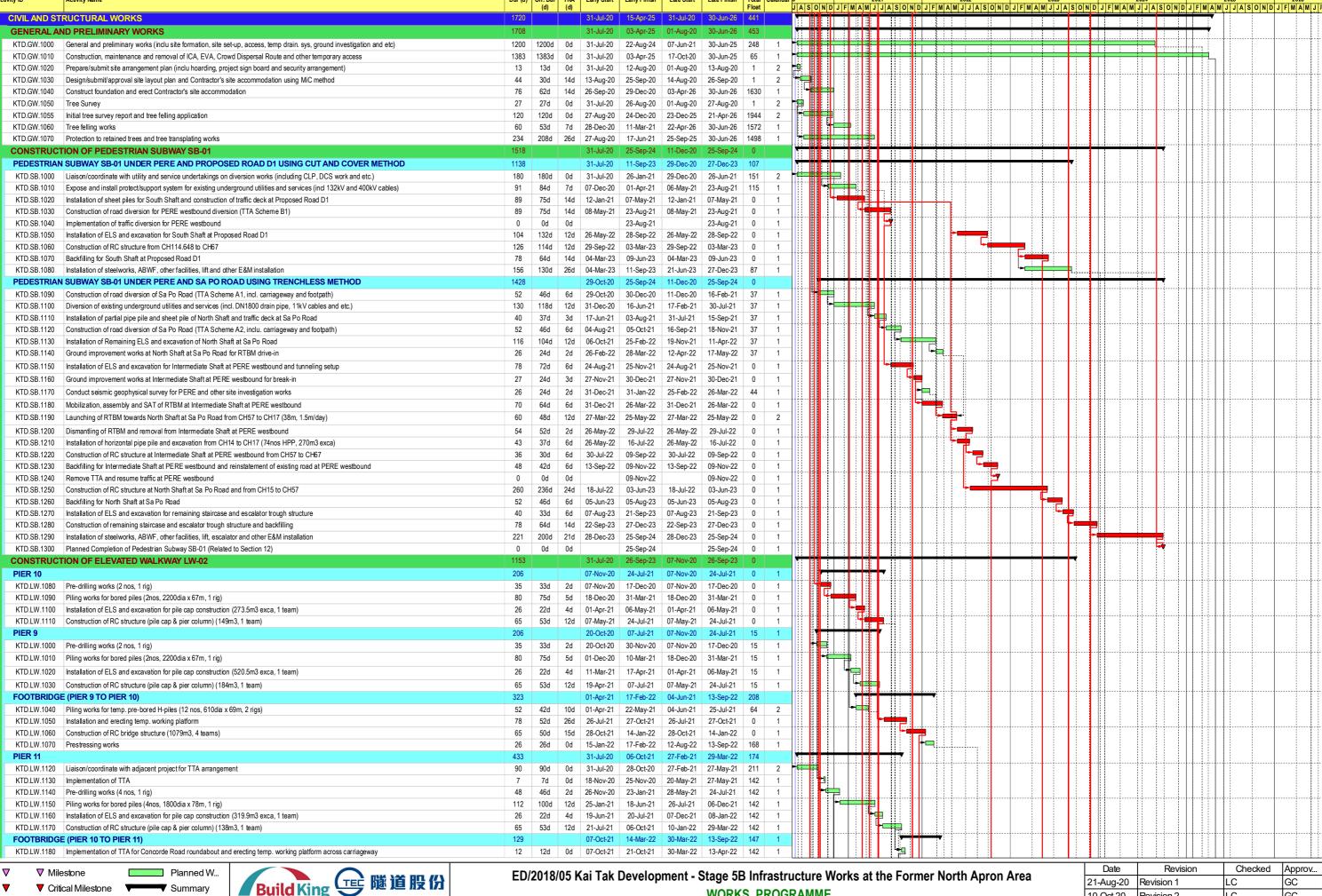


Link of communication

# **Appendix B – Construction Programme**







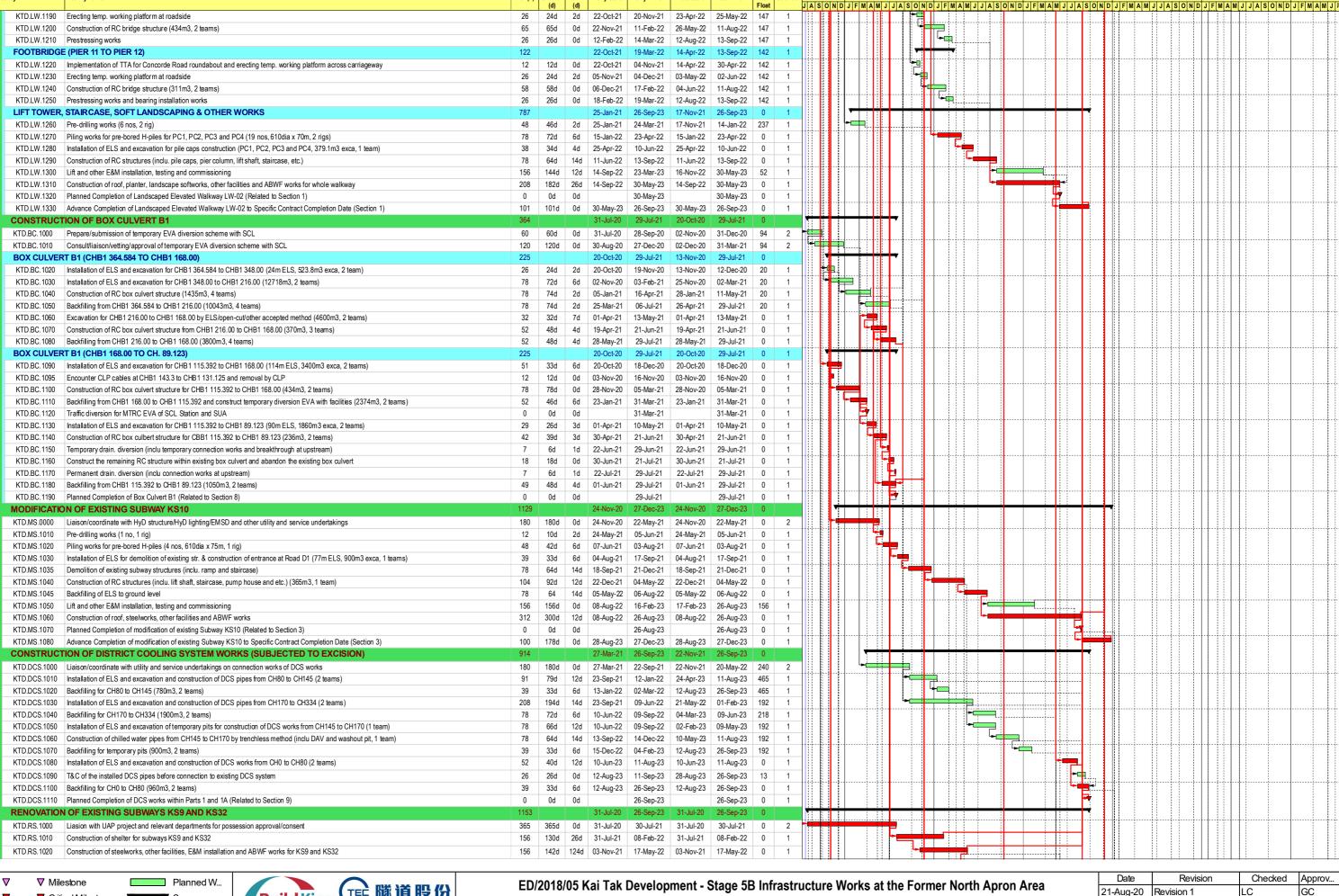
Critical Work



**WORKS PROGRAMME** 

(Page 3 of 5)

Date	Revision	Checked	Approv
21-Aug-20	Revision 1	LC	GC
10-Oct-20	Revision 2	LC	GC
18-Nov-20	Revision 3	LC	GC



Critical Work

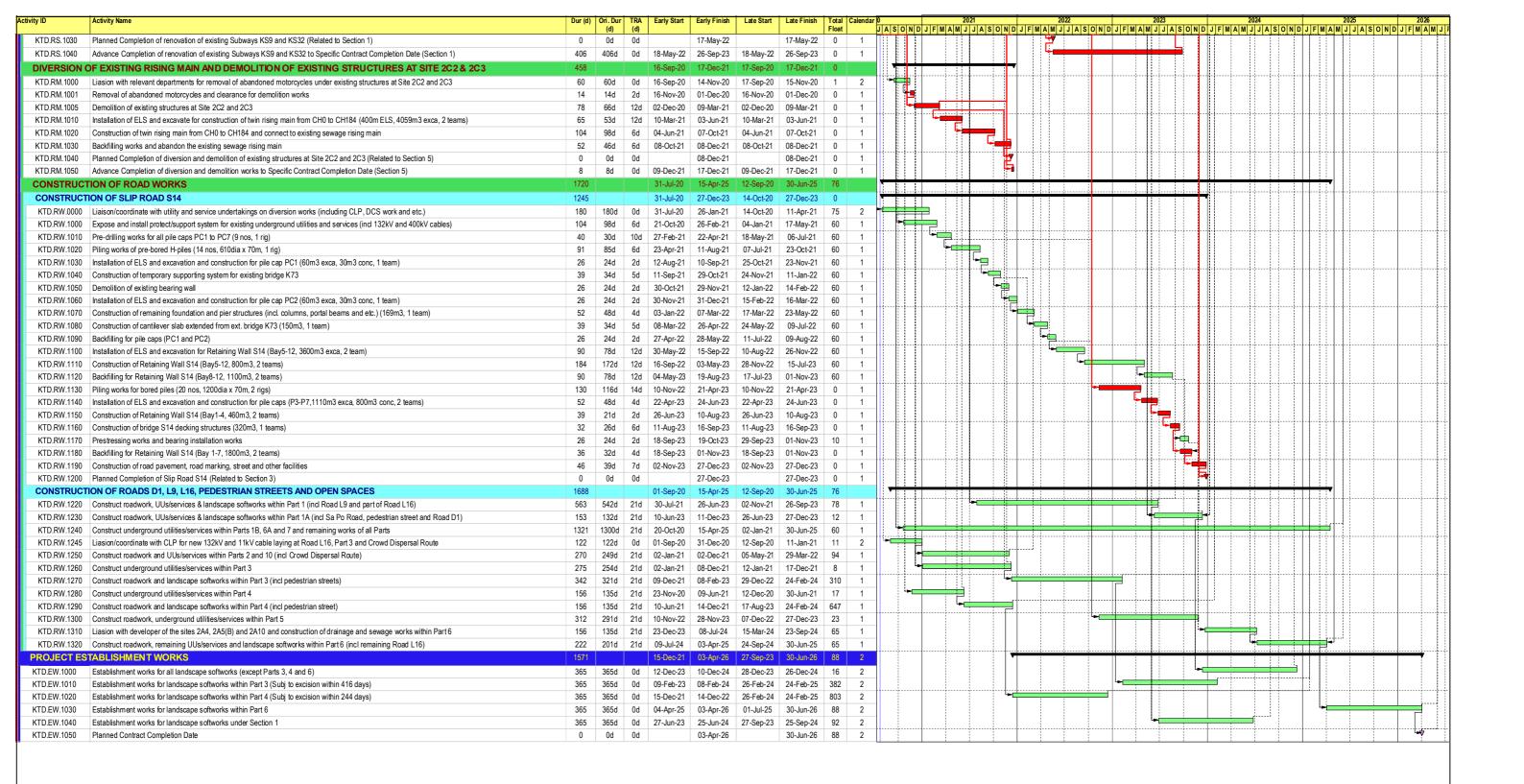
Critical Milestone





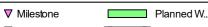
**WORKS PROGRAMME** (Page 4 of 5)

Date	Revision	Checked	Approv
21-Aug-20	Revision 1	LC	GC
10-Oct-20	Revision 2	LC	GC
18-Nov-20	Revision 3	LC	GC





Critical Work







Date	Revision	Checked	Approv
21-Aug-20	Revision 1	LC	GC
10-Oct-20	Revision 2	LC	GC
18-Nov-20	Revision 3	LC	GC

# Appendix C – Environmental monitoring schedules

# Contract No. EDO 2/2020 Environmental Monitoring at Kai Tak Development – Stage 5B infrastructure works at the former north apron area Proposed Environmental Monitoring and Weekly Site Inspection Schedule for July 2021

July 2021

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3 24-hr TSP and 1-hrX3 TSP: AM2(A), AM3
4	5	6	7	8 Weekly Site Inspection	9 24-hr TSP and 1-hrX3 TSP: AM2(A), AM3 30-min Noise: M4(A), M5(A)	10
11	12	13	14	15 Weekly Site Inspection 24-hr TSP and 1-hrX3 TSP: AM2(A), AM3 30-min Noise: M4(A), M5(A)	16	17
18	19	20	21 24-hr TSP and 1-hrX3 TSP: AM2(A), AM3 30-min Noise: M4(A), M5(A)	Weekly Site Inspection	23	24
25	26	27 24-hr TSP and 1-hrX3 TSP: AM2(A), AM3 30-min Noise: M4(A), M5(A)	28	29 Weekly Site Inspection + SSMC meeting	30	31

### NOTE:

1) Site inspection schedule and Impact monitoring schedule may be changed due to unforeseen circumstance (e.g. adverse weather).

## **Air Quality Monitoring Station**

AM2(A) Ng Wah Catholic Secondary School AM3 - Sky Tower **Noise Quality Monitoring Station** 

M4(A) - Le Billionnaire M5(A) - Prince Ritz Contract No. EDO 2/2020 Environmental Monitoring at Kai Tak Development Stage 5B infrastructure works at the former north apron area

## Propose Environmental Monitoring and Weekly Site Inspection Schedule for August 2021

## August 2021

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2 24-hr TSP and 1-hrX3 TSP: AM2(A), AM3 30-min Noise: M4(A), M5(A)	3	4	5 Weekly Site Inspection	6	7 24-hr TSP and 1-hrX3 TSP: AM2(A), AM3
8	9	10	11	12 Weekly Site Inspection	13 24-hr TSP and 1-hrX3 TSP: AM2(A), AM3 30-min Noise: M4(A), M5(A)	14
15	16	17	18	19 Weekly Site Inspection 24-hr TSP and 1-hrX3 TSP: AM2(A), AM3 30-min Noise: M4(A), M5(A)	20	21
22	23	24	25 24-hr TSP and 1-hrX3 TSP: AM2(A), AM3 30-min Noise: M4(A), M5(A)	26 Weekly Site Inspection + SSMC meeting	27	28
29	30	31 24-hr TSP and 1-hrX3 TSP: AM2(A), AM3 30-min Noise: M4(A), M5(A)				

#### NOTE:

1) Site inspection schedule and Impact monitoring schedule may be changed due to unforeseen circumstance (e.g. adverse weather).

### **Air Quality Monitoring Station**

AM2(A) Ng Wah Catholic Secondary School AM3 - Sky Tower Noise Quality Monitoring Station

M4(A) - Le Billionnaire M5(A) - Prince Ritz

# **Appendix D – Photographic records**

## Impact Air Quality Monitoring



Measurement setup at AM2(A)



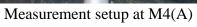
Measurement setup at AM3



Weather Station at the rooftop of Ng Wah Catholic Secondary School

## Impact Noise Monitoring







Measurement setup at M5(A)

 $\begin{tabular}{lll} Appendix & E & - & Calibration & certificates, & catalogue & of & air & quality \\ monitoring equipment & & & & \\ \end{tabular}$ 

## Catalogue of High Volume Sampler (HVS)



The TE-5170 is a high volume ambient Total Suspended Particulate (TSP) air sampler featuring a mass flow controller (MFC) for accurate and consistent particulate sampling. The mass flow controller adjust the motor speed as the filter media collects particulate to maintain a constant flow rate throughout the entire sample duration. The system utilizes a stainless steel filter holder for use with standard 8" x 10" filter paper. The anodized aluminum shelter and robust electrical components allow the system to operate a continuous 24 hour sample.

ABOUT US: Tisch Environmental Inc. Tisch Environmental is the benchmark for high volume air sampling, particulate, metals, volatiles, and specialty monitoring equipment. Since the company's inception in 1953 as General Metal Works, our product line has expanded from the first high volume air sampler to include high-tech and custom samplers. Our clients are professionals from every sector of the regulatory and industrial markets.

- 7-Day Mechanical Timer
- Elapsed Time Indicator
- Aluminum Outdoor Shelter
- Brush Style Motor
- Dickson Chart Recorder, 24 Hour
- → Stainless Steel Filter Holder
- 36-60 CFM
- Made In USA

Available Models

TE-5170 TSP MFC, 110 Volt 60 Hertz, 8 Amps
TE-5170X TSP MFC, 220 Volt 50 Hertz 4 Amps
TE-5170XZ TSP MFC, 220 Volts 60 Hertz, 4 Amps

Calibration Equipment

TE-5028 -Variable Flow Calibration Kit
TE-HVC-V Xcalibrator HiVol Calibrator



## TSP MFC

MFC TSP Ambient Air Sampler

#### eneral System Specifications

Particulate Size:Total Suspended Particulate (TSP)
EPA Designation: CFR 40 Part 50 Appendix B
Flow Controller: Mass Flow Controller

Motor Style: Brush Style Motor Assembly

Pressure Recorder: Dickson Chart Recorder, 24 hour.

Timer: 7 Day Mechanical

Elapsed Time Indicator: Mechanical, Hours and Tenths

Flow Range: 39-60CFM, 1.09M<sup>3</sup>M-1.68M<sup>3</sup>M

Housing: Anodized Aluminum

Filter Holder: Stainless Steel, 8" x 10"

4" Recorder Charts: Box of 100

Filter Holder: 8" x 10" Stainless Steel with hold down frame

#### Application:

US EPA Reference Method Sampling, CFR Appendix J Part 50 Regulatory Compliance

Institutional Studies Construction Sites

Bridge and Water Tower Painting Sites

Fence Line Monitoring Industrial Monitoring Landfill Monitoring

Public Health Applications

#### Optional Equipmer

TE-3000 Filter Holder Cartridge TE-G653 8" x 10" Glass Fiber Filter Media

TE-33384 Motor Brush Set (110volt) TE-33378 Motor Brush Set (220volt)

TE-116311 Replacement Motor (110volt)
TE-116312 Replacement Motor (220volt)

TE-106 Recorder Charts
TE-160 Recorder Pen Points

TE-5018 Gasket 8" x 10"

Weight: 75lbs, Shelter

Shipping Dimensions: 46"W x 23"L x 20" H, Shelter 19"W x 19"L x 20"H, Lid

Assembled Dimensions: 28"W x 28"L x 61"H

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## Calibration Certificate of HVS

## Air Sampler Calibration Curve Plotting & Calculation

#### (Dickson recorder)

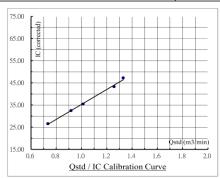
Calibration curve ref. No. :	ATSPC-01-2021052802	Date of calibration :	28/05/2021	
Location :	Sky Tower	Sampler :	TE-5170X	
Calibration Data		Serial Numbers :	4687	
Ambient barometric pressure	, Pa = 756.9 ( mmHg )	Ambient temperature, Ta =	306.35	( deg K )
Qstd Slope, m = 2.0488	32	Qstd Intercept, b = -0.0	011270	

#### Calibration Curve

CHIOTHIOT CHITC							
Plate No.	H <sub>2</sub> O	Qstd	I	IC			
Plate No.	( in )	( m <sup>3</sup> / min )	( chart )	( corrected )			
18	7.60	1.330	48.0	47.24			
13	6.80	1.258	44.0	43.31			
10	4.40	1.013	36.0	35.43			
7	3.60	0.917	33.0	32.48			
5	2.30	0.734	27.0	26.57			

#### Subsequent calculation of sampler flow

Method	Calibration equation	Slope, m	Intercept, b	Corr. coeff., r
Dickson recorder	Qstd = 1 / m1 [ (I) ( Sqrt ( ( Pav / 760 ) ( 298 / Tav ) ) ) - b1 ]	33.814	1.4881	0.9977



Calibration curve requirements: (A). r > 0.990; (B). At least 3 Qstd numbers are in the TSP range (1.1 - 1.7 m3 / min).

Remark: Qstd ( $m^3/min$ ) = 1/m [ Sqrt ( $H_2O$  (Pa/760) (298/Ta)) - b]. IC (corrected) = I [ Sqrt ((Pa/760) (298/Ta))].

FLOW (corrected) = Sqrt (FLOW (mano) (Pa / 760) (298 / Ta)).

 Calibrated by :
 28/05/2021
 Checked by :
 28/05/2021

 Name :
 (
 Poon Tsz Wing
 )
 Name :
 (
 Wong Yin Tong
 )

Form No. INS-HVS-CAL dd 16 01 2020

### Air Sampler Calibration Curve Plotting & Calculation

#### (Dickson recorder)

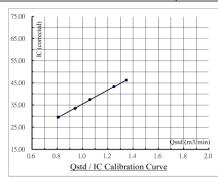
Calibration cur	rve ref. No. :	ATSPC-01-20	21052804	Date of calibration:	28/05/2021	
Location:	Ng Wah Ca	tholic Secondary	School	Sampler :	TE-5170X	
Calibration De	<u>ata</u>			Serial Numbers:	4360	
Ambient baron	netric pressure,	Pa = 756.9	(mmHg)	Ambient temperature, Ta	= 306.35	( deg K )
Qstd Slope, m	= 2.04882	2		Qstd Intercept, b =	-0.011270	

#### Calibration Curve

Plate No.	H <sub>2</sub> O	Qstd ( m³/min )	I	IC
	( in )	( m²/min )	( chart )	( corrected )
18	7.80	1.347	47.0	46.26
13	6.70	1.249	44.0	43.31
10	4.80	1.058	38.0	37.40
7	3.80	0.942	34.0	33.46
5	2.80	0.809	30.0	29.53

#### Subsequent calculation of sampler flow

Method	Calibration equation	Slope, m	Intercept, b	Corr. coeff., r
Dickson recorder	Qstd = 1 / m1 [ (I) ( Sqrt ( ( Pav / 760 ) ( 298 / Tav ) ) ) - b1 ]	31.315	4.1407	0.9998



Calibration curve requirements : (A). r > 0.990; (B). At least 3 Qstd numbers are in the TSP range (1.1 - 1.7 m3 / min).

Remark: Qstd ( $m^3 / min$ ) = 1/m [ Sqrt ( $H_2O$  (Pa / 760) (298 / Ta)) - b]. IC (corrected) = I [ Sqrt ((Pa / 760) (298 / Ta))].

FLOW ( corrected ) = Sqrt ( FLOW ( mano ) ( Pa / 760 ) ( 298 / Ta ) ).

 Calibrated by :
 28/05/2021
 Checked by :
 28/05/2021

 Name :
 (
 Ben Poon
 )
 Name :
 (
 Tommy Wong
 )

#### Calibration Certificate of HVS RECALIBRATION **DUE DATE:** July 17, 2021 **Calibration Certification Information** Cal. Date: July 17, 2020 Rootsmeter S/N: 438320 Operator: Jim Tisch Pa: 753.4 mm Hg Calibration Model #: TE-5025A Calibrator S/N: 0006 ΔΡ Vol. Init Vol. Final ΔVol. ΔTime (m3) (m3) (mm Hg) (in H2O) (m3)1.4300 4.00 0.9010 5.00 8.8 0.8570 0.7090 12.8 8.00 ΔH(Ta/Pa) Qstd Qa (y-axis) (m3) (x-axis) 0.9937 0.6949 1.4128 0.9958 0.8865 1.9980 0.9915 0.9817 1.2536 0.9895 0.9797 2.2338 1.4016 0.989 1.0982 0.9875 1.0960 1.1509 2.3428 0.988 1.1532 1.4700 1.3837 2.8255 0.9830 1.3865 1.7729 2.04882 1.28293 **QSTD** b= -0.01127 QA -0.00707 0.99999 0.99999 Va= ΔVol((Pa-ΔP)/Pa) Qa= Va/ΔTime Vstd= ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta) For subsequent flow rate calculations: $Qa = 1/m \left( \sqrt{\Delta H(Ta/Pa)} - b \right)$ Standard Conditions 298.15 °K RECALIBRATION US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the ΔP: rootsmeter manometer reading (mm Hg) Ta: actual absolute temperature (°K) Determination of Suspended Particulate Matter in Pa: actual barometric pressure (mm Hg the Atmosphere, 9.2.17, page 30 b: intercept m: slope

Tisch Environmental, Inc. 145 South Miami Avenue

Village of Cleves, OH 45002

www.tisch-env.com

TOLL FREE: (877)263-7610 FAX: (513)467-9009

## Catalogue of Dust Meter (TSI Sidepak AM510)

The SidePak AM510 monitor's easy-to-read display shows your data as both real-time aerosol mass-concentration and 8-hour time-weighted average (TWA). With its convenient data logging and long battery life, the AM510 is also ideal for extended sampling. The easy-to-use TrakPro Data Analysis Software lets you create effective graphs and reports.

#### **User Friendly**

- + Small, lightweight and quiet to maximize worker acceptance
- + Rugged design with secure belt clip
- + Easy-to-understand user interface with only four keys
- + Lockable keypad prevents tampering while sampling
- + User-adjustable sample flow rate
- + Define, label and store multiple calibration constants
- + Easy-to-read LCD display
- + Convenient, threaded tripod socket accommodates area sampling

#### **Advanced Features**

- + Smart Battery Management System provides precise run time information, maximizes battery capacity and speeds charging
- Integrated pump allows use of size-selective aerosol inlet conditioners
- + Built-in impactors let you choose "none," 1.0, 2.5 or 10-micron cut off
- + 10-mm Dorr-Oliver cyclone for respirable sampling
- + Display shows real-time concentrations (mg/m³) and "on-the-fly" TWA as you data log
- + Display statistics: max, min and average readings, elapsed time and 8-hour TWA

#### **Quick and Easy Reports**

- + Convenient preprogramming for occupational exposure sampling
- + Data log for long periods and store multiple tests
- + Analyze data, print graphs and create reports with TrakPro Data Analysis Software
- + USB port lets you conveniently connect to your computer

#### Power to Spare

- + Long-lasting NiMH rechargeable battery packs eliminate
- + Choice of rechargeable NiMH smart battery packs or AA-cell pack

#### Model AM510 SidePak Personal Aerosol Monitor

#### Sensitivity

90° light scattering, Sensor Type 670 nm laser diode Aerosol 0.001 to 20 mg/m<sup>3</sup> Concentration Range (calibrated to respirable fraction of ISO 12103-1,

A1 test dust)

Particle Size Range 0.1 to 10 micrometer (µm) Minimum Resolution 0.001 mg/m<sup>3</sup>

Zero stability

±0.001 mg/m3 over 24 hours using 10-second time-constant Temperature Coefficient Approximately +0.0005 mg/m3 per

°C (for variations from temperature at which instrument was last zeroed)

Flow Rate

User-adjustable, 0.7 to 1.8 Range liters/min (L/min)

**Temperature Range** 

32 to 120°F (0 to 50°C)

Storage Range -4 to 140°F (-20 to 60°C)

**Operational Humidity** 

0 to 95% RH, non-condensing

Time Constant (LCD display)

Jser-adjustable, 1 to 60 seconds

Data Logging

Approx. 31,000 Data Points Logging Interval User-adjustable, 1 second to 1 hour

#### **User-Select Calibration Factors**

Factory Setting 1.0 (non-adjustable) User-defined Settings 3, with user-defined labels Range 0.1 to 10.0, user-adjustable

Physical

Weight

4.2 x 3.7 x 2.8 in. (106 x 92 x 70 mm) with 801723, 801724, 801729 or External Dimensions

801743 battery

5.1 x 3.7 x 2.8 in. (130 x 92 x 70 mm)

with 801708, 801722, 801728,

801735, or 801736 battery

16 oz (0.46 kg) with 801723, 801724,

801729 or 801743 battery 19 oz (0.54 kg) with 801708, 01722,

801728, 801735, or 801736 battery

Display Tripod Socket 2 line x 12 character LCD

1/4-20 female thread

## Power Supply/Charger (P/N 2613210) Input Voltage Range 100 to 240 VAC. S0 to 60 Hz

Input Voltage Range Output Voltage 9 VDC@10 A

#### Maintenance

Factory Clean/Calibrate Recommended annually User Zero Calibration Before each use As needed User Flow Calibration

#### Communications Interface

Type Connector, Instrument USB Mini-B (socket)

#### Minimum Computer Requirements for

TrakPro™ Data Analysis Software Communications Port Universal Serial Bus (USB)

v 1.1 or higher

Microsoft Windows® XP, or 7 Operating System (32-bit or 64-bit) operating systems

#### **Battery Performance**

Battery Options	Charge Time (hrs)*	Intrinsic Safety Rating	Run Time (hrs @ 1.7 L/min)
1600 mAH NiMH Pack, 4.8 V (P/N 801723)	3.0	No	7.1
1650 mAH NiMH Pack, 4.8V (P/N 801724, 801729 or 801743)	3.5	CSA**	7.5
2700 mAH NiMH Pack, 4.8 V (P/N 801722 or 801728)	5.5	No	12.0
2700 mAH NiMH Pack, 4.8 V (P/N 801735)	5.5	No	12.0
6-Cell AA-size Alkaline Pack*** (P/N 801708 or 801736 with six user-supplied AA cells)	N/A	No	22.5

\*Of a fully depleted battery

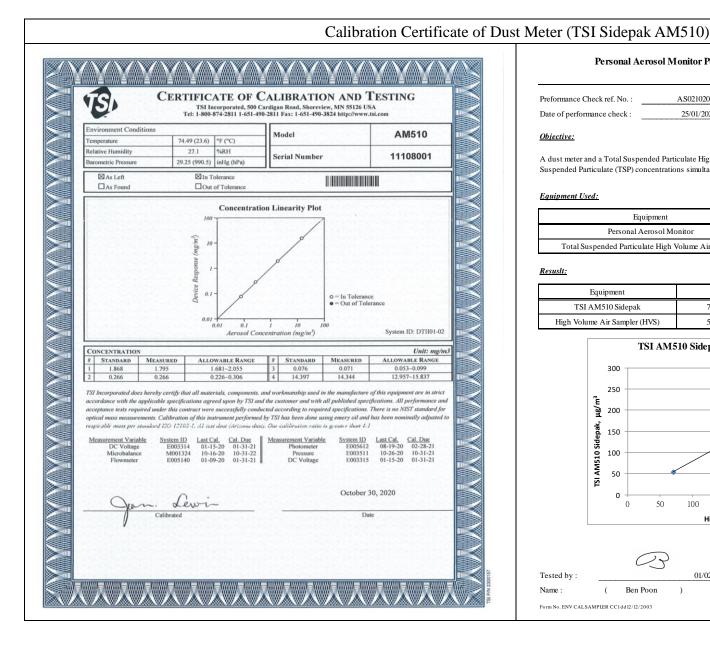
\*\*All dust plugs and dust gaskets must be installed.

\*\*\*Using Energizer AA-size, E91 alkaline batteries.

#### **Battery Level Indicator**

The Smart Battery Management System™ technology utilizes a built-in "gauge" in the SidePak™ battery packs. The gauge monitors battery capacity and calculates run time information by dividing capacity of the battery (mAH) by the instantaneous current consumed by the instrument (mA). This calculation is correct for current operating conditions and can change due to current (mA) consumption or changes in battery capacity.





#### Personal Aerosol Monitor Performance check with High Volume Sampler

Preformance Check ref. No.: AS0210201-2 Report Issue Date: 01/02/2021 25/01/2021 Date of performance check:

#### Objective:

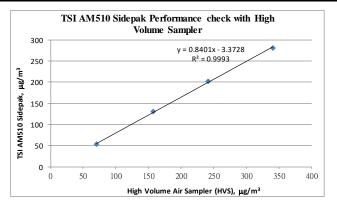
A dust meter and a Total Suspended Particulate High Volume Air Sampler (HVS) were placed together to measure the Total Suspended Particulate (TSP) concentrations simultaneously to check the performance.

#### Equipment Used:

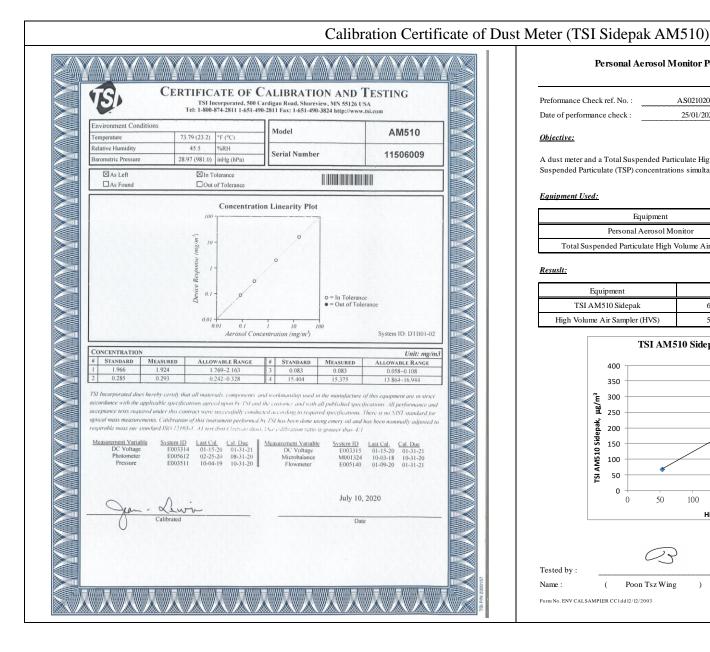
Equipment	Manufacturer and Model	Serial Number
Personal Aerosol Monitor	TSI AM510 Sidepak	11108001
Total Suspended Particulate High Volume Air Sampler	GS2310	10346

#### Resustt:

Equipment	Measurement Result, μg/m <sup>3</sup>			
TSI AM510 Sidepak	70	157	242	341
High Volume Air Sampler (HVS)	53	131	202	281



		$\mathcal{C}_{\mathcal{S}}$	)						
Tested by:				01/02/2021	Checked by:				01/02/2021
Name:	(	Ben Poon	)		Name:	(	Tommy Wong	)	
Form No. ENV CALS.	AMPLER CC	1 dd 12/12/2003							



#### Personal Aerosol Monitor Performance check with High Volume Sampler

Preformance Check ref. No.: AS0210201-3 Report Issue Date: 01/02/2021 25/01/2021 Date of performance check:

#### Objective:

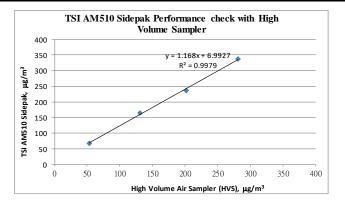
A dust meter and a Total Suspended Particulate High Volume Air Sampler (HVS) were placed together to measure the Total Suspended Particulate (TSP) concentrations simultaneously to check the performance.

#### Equipment Used:

Equipment	Manufacturer and Model	Serial Number
Personal Aerosol Monitor	TSI AM510 Sidepak	11506009
Total Suspended Particulate High Volume Air Sampler	GS2310	10346

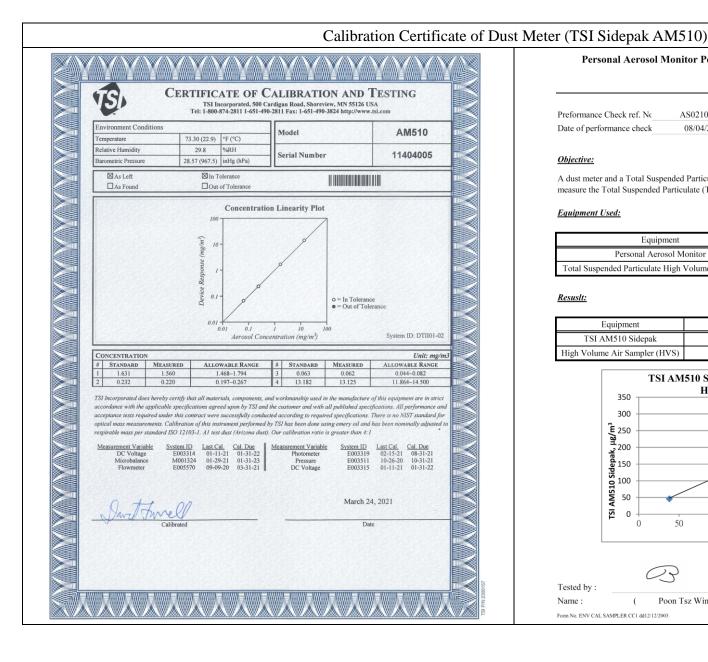
#### Resustt:

Equipment	Measurement Result, μg/m <sup>3</sup>					
TSI AM510 Sidepak	68	68 165 236 338				
High Volume Air Sampler (HVS)	53	131	202	281		



		03					1	
Tested by:			01/	/02/2021	Checked by:			01/02/2021
Name:	(	Poon Tsz Wing	)		Name:	(	Wong Yin Tong	)

Form No. ENV CALSAMPLER CC1dd12/12/2003



#### Personal Aerosol Monitor Performance check with High Volume Sampler

Preformance Check ref. No	AS0210410-1	Report Issue Date	10/04/2021	
Date of performance check	08/04/2021			

#### Objective:

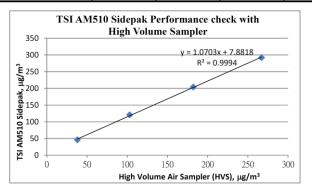
A dust meter and a Total Suspended Particulate High Volume Air Sampler (HVS) were placed together to measure the Total Suspended Particulate (TSP) concentrations simultaneously to check the performance.

#### Equipment Used:

Equipment	Manufacturer and Model	Serial Number
Personal Aerosol Monitor	TSI AM510 Sidepak	11404005
Total Suspended Particulate High Volume Air Sampler	GS2310	10346

#### Resustt:

Equipment	Measurement Result, μg/m <sup>3</sup>				
TSI AM510 Sidepak	46	121	204	292	
High Volume Air Sampler (HVS)	38	103	182	267	



		$\mathcal{O}_{\mathcal{I}}$				/(/)	
Tested by:		)		Checked by:		<u> </u>	
Name:	(	Poon Tsz Wing	)	Name:	(	Wong Yin Tong	)

## Catalogue of Weather Station

## Cabled Vantage Pro2™ & Vantage Pro2 Plus™ Stations



6152C 6162C

Vantage Pro2™

The Vantage Pro2<sup>™</sup> (# 6152C) and Vantage Pro2<sup>™</sup> Plus (# 6162C) cabled weather stations include two components: the Integrated Sensor Suite (ISS) and the console. The ISS contains the sensor interface module (SIM), rain collector, an anemometer, and a passive radiation shield. The Vantage Pro2 console provides the user interface, data display, and calculations. The Vantage Pro2 Plus weather station includes two additional sensors that are optional on the Vantage Pro2 and purchased separately: the UV Sensor and the Solar Radiation Sensor. The console and ISS are powered by an AC-power adapter connected to the console. Batteries can be installed in the console to provide a backup power supply. Use WeatherLink® to let your weather station interface with a computer, log data, and upload weather information to the Internet. The 6152C and 6162C models rely on passive shielding to reduce solar-radiation induced temperature errors in the outside temperature sensor readings.

#### Integrated Sensor Suite (ISS)

Non-operating Temperature . . . . . . . . . . . . . . . -40° to +158°F (-40° to +70°C) console and ISS 

Maximum displayable wind decreases as the length of cable increases, at 140' (42 m) of cable, the maximum wind speed displayed is 135 mph (60 m/s); at 240' (73 m), the maximum wind speed displayed is 100 mph (34 m/s).

Wind Speed Sensor . . . . . . . . . . . . . . . . Solid state magnetic sensor Wind Direction Sensor . . . . . . . . . . . . . . . . . Wind vane with potentiometer (214 cm2) collection area Temperature Sensor Type...... PN Junction Silicon Diode Relative Humidity Sensor Type . . . . . . . . . . . . Film capacitor element Sensor Inputs 

ISS Dimensions(not including anemometer or bird spikes):

Vantage Pro2 with Fan-Asprated Rad Shield........... 20.8" x 9.4" x 16.0" (528 mm x 239 mm x 406 mm) Vantage Pro2 Plus with Standard Rad Shield . . . . . . . . 14.3" x 9.7" x 14.5" (363 mm x 246 mm x 368 mm) Vantage Pro2 Plus with Fan-Aspirated Rad Shield . . . . . 21.1" x 9.7" x 16.0" (536 mm x 246 mm x 406 mm)

DAVIS [""||| \* Davis Instruments 3465 Diablo Ave., Hayward, CA 94545-2778 USA (510) 732-9229 \* FAX (510) 670-0589 \* sales@davisinstruments.com \* www.davisinstruments.com

DS6152C, 6162C Rev. W 12/7/18

Vantage Pro2

### Ultra Violet (UV) Radiation Index (requires UV sensor)

Historical Graph Data . . . . . . . . . . . . Hourly Average, Daily, Monthly Highs Alarm . . . . . High Threshold from Instant Calculation

#### Wind

#### Wind Chill (Calculated)

Range . . . . . . -110° to +135°F (-79° to +57°C)

Source...... United States National Weather Service (NWS)/NOAA Equation Used . . . . . . . . . . Osczevski (1995) (adopted by US NWS in 2001)

Variables Used . . . . . . . . . . . . . . . . Instant Outside Temperature and 10-min. Avg. Wind Speed

Current Display Data . . . . . . . . . . . . . . . Instant Calculation

Current Graph Data . . . . . . . . Instant Calculation; Hourly, Daily and Monthly Low

Historical Graph Data. . . . . . . . . . . . . . . . . Hourly, Daily and Monthly Lows Alarm..... Low Threshold from Instant Calculation

Wind Direction

Update Interval . . . . . . . . . . . . . . . . . . 2.5 to 3 seconds

Monthly Dominant

Monthly Dominants

Wind Speed

other units are converted from mph and rounded to nearest 1 km/hr, 0.1

m/s or 1 knot

length of cable from anemometer to ISS increases.)

Current Display Data . . . . . . . . . . . . . . . Instant

Current Graph Data . . . . . . . . . . Instant Reading; 10-minute and Hourly Average; Hourly High; Daily,

Monthly and Yearly High with Direction of High

Highs with Direction of Highs

High Thresholds from Instant Reading and 10-minute Average

## Calibration Certificate of Weather Station



AAST-WS-04 Cal Cort 2021/3/16

## **Calibration Certificate**

#### Certificate No.: CC0362103

I. Description	W 31 W 31 W 31 W 31
Calibration item :	a) Temperature b) Relative Humidity c) Wind Speed d) Wind Direction
Equipment description :	Weather Station
Manufacturer :	Davis Vantage Pro 2
Type / Model No. :	6152CUK
Serial No. :	BD181101023
Assigned equipment no. :	N/A
Adjustment :	N/A
Remark :	Received with good condition

#### 2. Customer information

Customer :	Castco Testing Centre Limited		
Address :	33, On Kui Street, Fanling, N.T.		
Date of receipt : 10 March 2021			

3. Date of performance of the calibration

Date of calibration : 16 March 2021



Approved Signatory

Company Chop: Certificate issue date: 18 March 2021

1. The certificate shall not reproduced except in full without the written approval of CAL LAB LTD

2. The certificate is issued subject to the latest Term and Condition, available assessable at our web site

Tel: (852)25680106 Fax(852)30116194 Email: info@callab.com.hk Website:callab.com.hk

Address: Room 2103, Technology Plaza, 29-35 Sha Tsui Road, Tsuen Wan, NT, Hong Kong

Page 1 of 4

cc0362103

4. Result of Calibration

Reference reading ; °C	Reading; °C	Error of indication; °C
15.0	15	0.0
20.0	20	0.0
25.0	25	0.0
30.0	30	0.0

Estimated expanded uncertainty: 1.0 °C

Technical Requirement: N/A

Note: The technical requirement is refer to JJF 1183-2007

b) Relative Humidity	Temperature s	etting of humidity chamber : 23 °
Reference reading ; % RH	Reading; % RH	Error of indication; % RH
40.0	42	2.0
50.0	52	2.0
70.0	71	1.0

Estimated expanded uncertainty: 3 %RH

Technical Requirement: N/A

Note: The technical requirement is refer to JJG 1076-2001

CT-002-04 Page 2 of 4

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## Calibration Certificate of Weather Station



Reference reading; m/s	Measured reading; m/s	Error of indication; %
0.0	0.0	N/A
2.0	1.8	-10.0
5.0	4.7	-6.0
8.0	7.8	-2.5

Estimated expanded uncertainty: 0.5 m/s

Technical Requirement: +/-5% or 1 m/s

Reference reading	Measured reading	Error of indication		
0°	0°	0°		
45°	45°	0°		
90°	90°	0°		
135°	135°	0°		
180°	180°	0°		
225°	225°	0°		
270°	270°	O°		
315°	315°	O°		

Estimated expanded uncertainty: 5°

Technical Requirement: N/A

Note: The arrow head was adjusted to the magnetic north before performing calibration.

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Cal Lab Limited

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Tel : (852)25680106 Fax(852)30116194 Email: info@callab.com.hk Website:callab.com.hk



5. Reference method for calibration

Temperature	JJF 1183-2007
Relative humidity	JJG 1076-2001
Wind Speed	SOP-251
Wind Direction	SOP-252

#### 6. Environment condition of calibration

Temperature ; °C	24.0 °C	
Relative humidity; %RH	54 %RH	A A

#### 7. Reference equipment used in the calibration

Item	Model	Serial No.	Expiry date	Traceable to
Platinum resistance thermometer	KPPRHT-A-1	KCI I-1095, KCI P-1095	4 Mar 2022	SMQ
Humidity sensor	KPPRHT-A-1	KCI I-1095, KCI P-1095	4 Mar 2022	SMQ
Reference Anemometer	405-V1	41543692	1 Jan 2022	SMQ

The estimated expanded uncertainties have been calculated in "Evaluation and expression of uncertainty in

measurement" and give an internal estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

assumed unless expiritory stated.

The standard (s) and instrument used in the calibration are traceable to national or international recognized standard and are calibrated on a schedule to maintain the accuracy and good condition.

The result reported in this certificate refer to the condition of the instrument on the date of calibration and

carry no implication regarding the long term stability of the instrument.

The result shows in this calibration certificate relate only to the item calibrated, and the result only applies to

the calibration item as received.

\*\*\* End of Certificate \*\*\*

CT-END-02 Page 4 of 4 cc0362103

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Cal Lab Limited
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Tel : (852)25680106 Fax(852)30116194 Email: info@callab.com.hk Website:callab.com.hk

# Appendix F – Weather information

## **General Information**

Date	Absolute Daily Min Temperature (°C)	Absolute Daily Max Temperature (°C)	Total Rainfall (mm)	Mean Relative Humidity (%)
01/07/2021	29.2	32.4	Trace	78
02/07/2021	29.3	32.8	0.0	77
03/07/2021	29.1	33.0	Trace	79
04/07/2021	28.9	33.2	0.0	79
05/07/2021	28.0	33.8	2.3	79
06/07/2021	26.7	32.7	18.4	80
07/07/2021	26.6	33.1	11.7	81
08/07/2021	28.4	32.8	1.5	79
09/07/2021	28.2	34.8	0.0	76
10/07/2021	28.2	34.0	0.0	76
11/07/2021	28.8	33.6	Trace	77
12/07/2021	28.7	34.8	0.1	75
13/07/2021	28.8	35.3	0.0	72
14/07/2021	29.1	34.1	1.5	75
15/07/2021	28.9	35.4	0.0	71
16/07/2021	28.7	30.9	Trace	78
17/07/2021	26.9	31.2	0.2	80
18/07/2021	24.9	28.8	42.4	90
19/07/2021	25.0	27.9	117.2	93
20/07/2021	25.3	27.1	87.8	94
21/07/2021	25.3	27.8	28.4	94
22/07/2021	26.9	32.8	0.0	80
23/07/2021	27.4	34.1	0.0	77
24/07/2021	26.5	33.2	26.5	82
25/07/2021	25.9	33.6	8.9	81
26/07/2021	28.7	33.9	0.0	78
27/07/2021	29.5	35.3	Trace	75
28/07/2021	29.1	34.1	Trace	76
29/07/2021	28.3	32.3	7.8	84
30/07/2021	26.5	30.5	7.9	85
31/07/2021	27.0	32.2	16.9	88

NOTE1: The above weather information was obtained from manned weather station of Hong Kong Observatory.

NOTE2: Trace means rainfall less than 0.05 mm

https://www.hko.gov.hk/en/cis/dailyExtract.htm?y=2021&m=07

Kai Tak Runway Park Information

Date	Absolute Daily Min Temperature (°C)	Absolute Daily Max Temperature (°C)
01/07/2021	28.5	32.3
02/07/2021	28.8	32.4
03/07/2021	28.6	32.9
04/07/2021	28.4	31.9
05/07/2021	27.5	31.5
06/07/2021	25.8	32.2
07/07/2021	26.2	30.2
08/07/2021	28.3	30.6
09/07/2021	27.6	32.2
10/07/2021	27.1	31.5
11/07/2021	28.5	31.5
12/07/2021	28.5	31.7
13/07/2021	27.7	34.2
14/07/2021	27.7	32.4
15/07/2021	28.1	31.7
16/07/2021	27.5	30.4
17/07/2021	26.4	28.9
18/07/2021	24.7	28.7
19/07/2021	25.0	28.3
20/07/2021	25.2	27.8
21/07/2021	25.2	28.3
22/07/2021	27.4	32.9
23/07/2021	27.7	34.8
24/07/2021	25.9	33.9
25/07/2021	26.2	34.0
26/07/2021	28.9	33.3
27/07/2021	27.8	35.8
28/07/2021	28.8	35.0
29/07/2021	28.1	33.4
30/07/2021	26.5	31.2
31/07/2021	26.3	32.8

NOTE1: The above weather information was obtained from manned weather station of Kai Tak Runway Park.

https://i-lens.hk/hkweather/history\_chart.php?date=2021-07-01&chart\_type=DG\_TEMP

## Mean Wind Speed and Wind Direction recorded by the weather station setup at the rooftop of Ng Wah Catholic Secondary School

Date	Time	Wind Speed (m/s)	Wind Direction												
01/07/2021	0:00	0.9	45	02/07/2021	0:00	0	112.5	03/07/2021	0:00	0.9	247.5	04/07/2021	0:00	0.4	90
01/07/2021	1:00	1.3	225	02/07/2021	1:00	0	112.5	03/07/2021	1:00	0.4	247.5	04/07/2021	1:00	0.4	112.5
01/07/2021	2:00	2.2	247.5	02/07/2021	2:00	0	0	03/07/2021	2:00	0.4	247.5	04/07/2021	2:00	0.4	90
01/07/2021	3:00	2.2	225	02/07/2021	3:00	0	112.5	03/07/2021	3:00	0.9	247.5	04/07/2021	3:00	0.4	90
01/07/2021	4:00	2.2	45	02/07/2021	4:00	0	247.5	03/07/2021	4:00	1.3	112.5	04/07/2021	4:00	0.4	112.5
01/07/2021	5:00	0.9	67.5	02/07/2021	5:00	0.4	270	03/07/2021	5:00	0.9	180	04/07/2021	5:00	0.4	90
01/07/2021	6:00	0.9	45	02/07/2021	6:00	0.9	315	03/07/2021	6:00	0.9	180	04/07/2021	6:00	0.4	90
01/07/2021	7:00	0.9	45	02/07/2021	7:00	0.4	90	03/07/2021	7:00	0.4	225	04/07/2021	7:00	0.9	135
01/07/2021	8:00	0.9	45	02/07/2021	8:00	0.9	157.5	03/07/2021	8:00	0.9	202.5	04/07/2021	8:00	0.4	135
01/07/2021	9:00	0.9	45	02/07/2021	9:00	0.9	45	03/07/2021	9:00	0.9	225	04/07/2021	9:00	0.9	112.5
01/07/2021	10:00	0.4	247.5	02/07/2021	10:00	0.9	225	03/07/2021	10:00	1.3	270	04/07/2021	10:00	0.4	247.5
01/07/2021	11:00	0.9	247.5	02/07/2021	11:00	1.3	112.5	03/07/2021	11:00	0.4	270	04/07/2021	11:00	0.9	225
01/07/2021	12:00	0.9	112.5	02/07/2021	12:00	1.3	112.5	03/07/2021	12:00	0.4	315	04/07/2021	12:00	1.3	112.5
01/07/2021	13:00	0.9	45	02/07/2021	13:00	1.3	90	03/07/2021	13:00	0.4	90	04/07/2021	13:00	1.3	112.5
01/07/2021	14:00	1.3	112.5	02/07/2021	14:00	1.3	90	03/07/2021	14:00	0.4	315	04/07/2021	14:00	1.8	112.5
01/07/2021	15:00	1.3	112.5	02/07/2021	15:00	1.3	112.5	03/07/2021	15:00	0.4	270	04/07/2021	15:00	0.9	157.5
01/07/2021	16:00	1.3	112.5	02/07/2021	16:00	1.3	112.5	03/07/2021	16:00	1.8	270	04/07/2021	16:00	0.9	270
01/07/2021	17:00	1.3	67.5	02/07/2021	17:00	1.3	112.5	03/07/2021	17:00	1.8	247.5	04/07/2021	17:00	1.3	337.5
01/07/2021	18:00	1.3	67.5	02/07/2021	18:00	0.9	90	03/07/2021	18:00	0.9	247.5	04/07/2021	18:00	1.3	315
01/07/2021	19:00	1.3	247.5	02/07/2021	19:00	0.9	90	03/07/2021	19:00	0.4	67.5	04/07/2021	19:00	1.3	337.5
01/07/2021	20:00	1.3	270	02/07/2021	20:00	0.9	112.5	03/07/2021	20:00	0.9	90	04/07/2021	20:00	0.4	337.5
01/07/2021	21:00	0.9	270	02/07/2021	21:00	0.4	112.5	03/07/2021	21:00	0.9	292.5	04/07/2021	21:00	0.4	22.5
01/07/2021	22:00	1.3	45	02/07/2021	22:00	0.4	112.5	03/07/2021	22:00	1.3	270	04/07/2021	22:00	0.4	112.5
01/07/2021	23:00	1.3	45	02/07/2021	23:00	0.4	135	03/07/2021	23:00	0.9	90	04/07/2021	23:00	0.4	112.5

## Mean Wind Speed and Wind Direction recorded by the weather station setup at the rooftop of Ng Wah Catholic Secondary School

Date	Time	Wind Speed (m/s)	Wind Direction												
05/07/2021	0:00	0.4	90	06/07/2021	0:00	0.9	112.5	07/07/2021	0:00	2.2	67.5	08/07/2021	0:00	1.3	90
05/07/2021	1:00	0.4	112.5	06/07/2021	1:00	0.9	112.5	07/07/2021	1:00	2.2	90	08/07/2021	1:00	0.9	90
05/07/2021	2:00	0.4	90	06/07/2021	2:00	0.9	112.5	07/07/2021	2:00	2.7	90	08/07/2021	2:00	0.9	90
05/07/2021	3:00	0.9	112.5	06/07/2021	3:00	0.9	112.5	07/07/2021	3:00	1.8	90	08/07/2021	3:00	1.3	67.5
05/07/2021	4:00	1.3	90	06/07/2021	4:00	0.9	135	07/07/2021	4:00	2.2	112.5	08/07/2021	4:00	1.3	67.5
05/07/2021	5:00	2.2	90	06/07/2021	5:00	0.9	135	07/07/2021	5:00	2.2	112.5	08/07/2021	5:00	1.3	247.5
05/07/2021	6:00	1.8	112.5	06/07/2021	6:00	0.9	135	07/07/2021	6:00	1.8	90	08/07/2021	6:00	1.3	90
05/07/2021	7:00	0.9	112.5	06/07/2021	7:00	1.3	112.5	07/07/2021	7:00	2.7	112.5	08/07/2021	7:00	1.8	67.5
05/07/2021	8:00	1.8	90	06/07/2021	8:00	1.3	90	07/07/2021	8:00	1.8	67.5	08/07/2021	8:00	2.7	45
05/07/2021	9:00	0.9	67.5	06/07/2021	9:00	1.3	112.5	07/07/2021	9:00	1.8	67.5	08/07/2021	9:00	2.2	67.5
05/07/2021	10:00	0.9	90	06/07/2021	10:00	2.2	90	07/07/2021	10:00	2.2	90	08/07/2021	10:00	1.3	67.5
05/07/2021	11:00	0.9	112.5	06/07/2021	11:00	1.8	112.5	07/07/2021	11:00	2.2	67.5	08/07/2021	11:00	1.3	90
05/07/2021	12:00	0.9	112.5	06/07/2021	12:00	1.8	112.5	07/07/2021	12:00	1.8	90	08/07/2021	12:00	1.3	90
05/07/2021	13:00	0.4	45	06/07/2021	13:00	0.4	67.5	07/07/2021	13:00	1.3	112.5	08/07/2021	13:00	0.9	67.5
05/07/2021	14:00	0.4	247.5	06/07/2021	14:00	0.4	67.5	07/07/2021	14:00	1.8	112.5	08/07/2021	14:00	1.3	67.5
05/07/2021	15:00	1.8	270	06/07/2021	15:00	0.4	45	07/07/2021	15:00	1.8	90	08/07/2021	15:00	1.3	45
05/07/2021	16:00	1.8	67.5	06/07/2021	16:00	0.4	90	07/07/2021	16:00	1.3	112.5	08/07/2021	16:00	0.9	45
05/07/2021	17:00	2.2	67.5	06/07/2021	17:00	0.4	45	07/07/2021	17:00	1.3	112.5	08/07/2021	17:00	0.9	45
05/07/2021	18:00	1.3	67.5	06/07/2021	18:00	1.8	67.5	07/07/2021	18:00	1.8	90	08/07/2021	18:00	1.3	67.5
05/07/2021	19:00	0.9	67.5	06/07/2021	19:00	0.4	112.5	07/07/2021	19:00	1.3	112.5	08/07/2021	19:00	0.9	67.5
05/07/2021	20:00	0.9	67.5	06/07/2021	20:00	0.4	90	07/07/2021	20:00	1.3	90	08/07/2021	20:00	0.9	67.5
05/07/2021	21:00	0.9	90	06/07/2021	21:00	0.9	112.5	07/07/2021	21:00	1.8	22.5	08/07/2021	21:00	0.9	67.5
05/07/2021	22:00	0.9	90	06/07/2021	22:00	0.9	270	07/07/2021	22:00	0.9	90	08/07/2021	22:00	0.9	67.5
05/07/2021	23:00	0.4	67.5	06/07/2021	23:00	0.9	67.5	07/07/2021	23:00	1.3	90	08/07/2021	23:00	0.9	45

## Mean Wind Speed and Wind Direction recorded by the weather station setup at the rooftop of Ng Wah Catholic Secondary School

Date	Time	Wind Speed (m/s)	Wind Direction												
09/07/2021	0:00	0.4	90	10/07/2021	0:00	0.9	247.5	11/07/2021	0:00	0.9	22.5	12/07/2021	0:00	0.4	135
09/07/2021	1:00	0.4	112.5	10/07/2021	1:00	0.9	112.5	11/07/2021	1:00	0.9	22.5	12/07/2021	1:00	0.4	225
09/07/2021	2:00	0.9	90	10/07/2021	2:00	1.8	90	11/07/2021	2:00	0.9	67.5	12/07/2021	2:00	0.4	247.5
09/07/2021	3:00	0.4	112.5	10/07/2021	3:00	1.3	90	11/07/2021	3:00	0.4	22.5	12/07/2021	3:00	0.4	247.5
09/07/2021	4:00	0.4	112.5	10/07/2021	4:00	1.8	90	11/07/2021	4:00	0.4	135	12/07/2021	4:00	0.4	112.5
09/07/2021	5:00	0.4	90	10/07/2021	5:00	1.3	112.5	11/07/2021	5:00	0.4	112.5	12/07/2021	5:00	0.4	135
09/07/2021	6:00	0.4	112.5	10/07/2021	6:00	1.3	112.5	11/07/2021	6:00	0.4	112.5	12/07/2021	6:00	0.9	225
09/07/2021	7:00	0.4	135	10/07/2021	7:00	0.9	112.5	11/07/2021	7:00	0.4	22.5	12/07/2021	7:00	0.9	225
09/07/2021	8:00	0.9	90	10/07/2021	8:00	0.9	112.5	11/07/2021	8:00	0.4	22.5	12/07/2021	8:00	0.4	157.5
09/07/2021	9:00	0.9	90	10/07/2021	9:00	0.4	112.5	11/07/2021	9:00	0.4	157.5	12/07/2021	9:00	0.4	157.5
09/07/2021	10:00	0.4	45	10/07/2021	10:00	0.9	112.5	11/07/2021	10:00	0.4	157.5	12/07/2021	10:00	0.9	157.5
09/07/2021	11:00	0.4	90	10/07/2021	11:00	0.9	247.5	11/07/2021	11:00	0.4	247.5	12/07/2021	11:00	0.4	135
09/07/2021	12:00	0.9	112.5	10/07/2021	12:00	1.3	112.5	11/07/2021	12:00	0.4	337.5	12/07/2021	12:00	1.3	112.5
09/07/2021	13:00	0.9	202.5	10/07/2021	13:00	1.3	112.5	11/07/2021	13:00	1.3	90	12/07/2021	13:00	1.8	112.5
09/07/2021	14:00	0.9	202.5	10/07/2021	14:00	1.8	112.5	11/07/2021	14:00	1.8	90	12/07/2021	14:00	0.4	112.5
09/07/2021	15:00	1.3	157.5	10/07/2021	15:00	0.9	112.5	11/07/2021	15:00	1.3	112.5	12/07/2021	15:00	0.4	247.5
09/07/2021	16:00	0.9	157.5	10/07/2021	16:00	0.9	112.5	11/07/2021	16:00	1.8	112.5	12/07/2021	16:00	0.4	247.5
09/07/2021	17:00	0.9	112.5	10/07/2021	17:00	1.3	112.5	11/07/2021	17:00	2.2	112.5	12/07/2021	17:00	0.4	315
09/07/2021	18:00	0.9	225	10/07/2021	18:00	0.9	112.5	11/07/2021	18:00	1.8	90	12/07/2021	18:00	0.9	315
09/07/2021	19:00	0.9	112.5	10/07/2021	19:00	0.9	112.5	11/07/2021	19:00	1.3	90	12/07/2021	19:00	0.9	247.5
09/07/2021	20:00	0.9	112.5	10/07/2021	20:00	0.9	112.5	11/07/2021	20:00	2.2	112.5	12/07/2021	20:00	0.4	270
09/07/2021	21:00	0.4	135	10/07/2021	21:00	0.4	112.5	11/07/2021	21:00	0.9	112.5	12/07/2021	21:00	0.4	225
09/07/2021	22:00	1.8	112.5	10/07/2021	22:00	0.4	135	11/07/2021	22:00	0.4	112.5	12/07/2021	22:00	0.9	247.5
09/07/2021	23:00	1.3	112.5	10/07/2021	23:00	1.3	112.5	11/07/2021	23:00	0.4	135	12/07/2021	23:00	0.4	67.5

Date	Time	Wind Speed (m/s)	Wind Direction												
13/07/2021	0:00	1.3	270	14/07/2021	0:00	1.8	90	15/07/2021	0:00	1.3	112.5	16/07/2021	0:00	1.3	67.5
13/07/2021	1:00	1.3	112.5	14/07/2021	1:00	1.8	112.5	15/07/2021	1:00	0.9	112.5	16/07/2021	1:00	1.3	90
13/07/2021	2:00	1.3	112.5	14/07/2021	2:00	0.9	90	15/07/2021	2:00	0.9	112.5	16/07/2021	2:00	1.3	135
13/07/2021	3:00	1.3	90	14/07/2021	3:00	0.9	112.5	15/07/2021	3:00	0.9	112.5	16/07/2021	3:00	2.2	67.5
13/07/2021	4:00	1.3	135	14/07/2021	4:00	1.3	90	15/07/2021	4:00	1.3	112.5	16/07/2021	4:00	1.3	90
13/07/2021	5:00	0.9	135	14/07/2021	5:00	0.9	112.5	15/07/2021	5:00	0.4	90	16/07/2021	5:00	1.8	90
13/07/2021	6:00	1.3	135	14/07/2021	6:00	0.4	112.5	15/07/2021	6:00	0.4	90	16/07/2021	6:00	1.8	45
13/07/2021	7:00	0.9	112.5	14/07/2021	7:00	0.9	22.5	15/07/2021	7:00	0.9	22.5	16/07/2021	7:00	2.7	90
13/07/2021	8:00	0.9	112.5	14/07/2021	8:00	1.3	112.5	15/07/2021	8:00	0.4	135	16/07/2021	8:00	2.7	90
13/07/2021	9:00	0.9	112.5	14/07/2021	9:00	0.9	0	15/07/2021	9:00	0.4	135	16/07/2021	9:00	2.2	90
13/07/2021	10:00	0.9	112.5	14/07/2021	10:00	0.4	112.5	15/07/2021	10:00	0.4	22.5	16/07/2021	10:00	1.3	112.5
13/07/2021	11:00	0.9	270	14/07/2021	11:00	1.8	90	15/07/2021	11:00	1.3	112.5	16/07/2021	11:00	1.3	67.5
13/07/2021	12:00	1.3	0	14/07/2021	12:00	1.3	45	15/07/2021	12:00	0.9	112.5	16/07/2021	12:00	1.8	90
13/07/2021	13:00	0.9	0	14/07/2021	13:00	0.9	90	15/07/2021	13:00	1.3	0	16/07/2021	13:00	1.3	0
13/07/2021	14:00	0.9	315	14/07/2021	14:00	0.9	112.5	15/07/2021	14:00	0.9	45	16/07/2021	14:00	1.8	90
13/07/2021	15:00	0.4	315	14/07/2021	15:00	0.9	67.5	15/07/2021	15:00	0.9	22.5	16/07/2021	15:00	0.9	0
13/07/2021	16:00	0.9	45	14/07/2021	16:00	0.9	225	15/07/2021	16:00	0.4	112.5	16/07/2021	16:00	0.9	112.5
13/07/2021	17:00	0.9	45	14/07/2021	17:00	0.9	67.5	15/07/2021	17:00	0.9	112.5	16/07/2021	17:00	1.3	90
13/07/2021	18:00	0.9	45	14/07/2021	18:00	0	135	15/07/2021	18:00	0.9	67.5	16/07/2021	18:00	0.9	90
13/07/2021	19:00	0.9	45	14/07/2021	19:00	0.4	67.5	15/07/2021	19:00	0.9	112.5	16/07/2021	19:00	0.9	45
13/07/2021	20:00	1.3	112.5	14/07/2021	20:00	0.9	0	15/07/2021	20:00	1.3	112.5	16/07/2021	20:00	0.9	112.5
13/07/2021	21:00	0.9	45	14/07/2021	21:00	0.9	0	15/07/2021	21:00	0.4	135	16/07/2021	21:00	1.3	112.5
13/07/2021	22:00	0.4	12.5	14/07/2021	22:00	0.4	45	15/07/2021	22:00	0.4	225	16/07/2021	22:00	1.3	112.5
13/07/2021	23:00	0.9	112.5	14/07/2021	23:00	0.4	112.5	15/07/2021	23:00	0.9	90	16/07/2021	23:00	1.8	90

Date	Time	Wind Speed (m/s)	Wind Direction												
17/07/2021	0:00	0.9	337.5	18/07/2021	0:00	1.3	90	19/07/2021	0:00	1.8	112.5	20/07/2021	0:00	0.9	270
17/07/2021	1:00	0.9	135	18/07/2021	1:00	0.9	90	19/07/2021	1:00	2.2	90	20/07/2021	1:00	0.9	0
17/07/2021	2:00	0.9	135	18/07/2021	2:00	0.9	67.5	19/07/2021	2:00	1.8	112.5	20/07/2021	2:00	0.9	0
17/07/2021	3:00	0.4	225	18/07/2021	3:00	0.9	315	19/07/2021	3:00	2.7	90	20/07/2021	3:00	1.3	22.5
17/07/2021	4:00	0.9	22.5	18/07/2021	4:00	0.9	270	19/07/2021	4:00	1.3	67.5	20/07/2021	4:00	0.4	157.5
17/07/2021	5:00	0.9	0	18/07/2021	5:00	1.3	90	19/07/2021	5:00	1.8	112.5	20/07/2021	5:00	0.9	22.5
17/07/2021	6:00	0.9	337.5	18/07/2021	6:00	0.9	90	19/07/2021	6:00	1.3	112.5	20/07/2021	6:00	0.9	315
17/07/2021	7:00	0.4	292.5	18/07/2021	7:00	1.3	67.5	19/07/2021	7:00	1.8	90	20/07/2021	7:00	0.9	337.5
17/07/2021	8:00	0.4	45	18/07/2021	8:00	1.8	67.5	19/07/2021	8:00	2.2	90	20/07/2021	8:00	0.9	270
17/07/2021	9:00	0.9	337.5	18/07/2021	9:00	0.4	45	19/07/2021	9:00	1.3	90	20/07/2021	9:00	0.4	90
17/07/2021	10:00	0.4	180	18/07/2021	10:00	0.9	135	19/07/2021	10:00	1.3	135	20/07/2021	10:00	0.9	90
17/07/2021	11:00	0.4	45	18/07/2021	11:00	1.3	90	19/07/2021	11:00	0.9	135	20/07/2021	11:00	1.3	90
17/07/2021	12:00	0.4	270	18/07/2021	12:00	0.4	90	19/07/2021	12:00	1.8	112.5	20/07/2021	12:00	0.4	112.5
17/07/2021	13:00	0.9	22.5	18/07/2021	13:00	0.9	90	19/07/2021	13:00	1.8	112.5	20/07/2021	13:00	0.9	90
17/07/2021	14:00	0.4	0	18/07/2021	14:00	1.3	90	19/07/2021	14:00	2.2	90	20/07/2021	14:00	0.4	135
17/07/2021	15:00	1.3	0	18/07/2021	15:00	0.4	112.5	19/07/2021	15:00	1.8	112.5	20/07/2021	15:00	0.4	135
17/07/2021	16:00	0.4	45	18/07/2021	16:00	0.9	90	19/07/2021	16:00	2.7	90	20/07/2021	16:00	0.4	90
17/07/2021	17:00	0.4	0	18/07/2021	17:00	0.4	135	19/07/2021	17:00	1.3	67.5	20/07/2021	17:00	0.4	112.5
17/07/2021	18:00	0.4	22.5	18/07/2021	18:00	0.4	135	19/07/2021	18:00	1.8	112.5	20/07/2021	18:00	0.9	112.5
17/07/2021	19:00	0.4	112.5	18/07/2021	19:00	0.4	90	19/07/2021	19:00	1.3	112.5	20/07/2021	19:00	1.3	90
17/07/2021	20:00	0.4	0	18/07/2021	20:00	0.4	112.5	19/07/2021	20:00	1.8	90	20/07/2021	20:00	1.8	112.5
17/07/2021	21:00	0.4	157.5	18/07/2021	21:00	0.9	112.5	19/07/2021	21:00	2.2	90	20/07/2021	21:00	1.3	90
17/07/2021	22:00	0.9	180	18/07/2021	22:00	1.3	90	19/07/2021	22:00	1.3	90	20/07/2021	22:00	1.8	90
17/07/2021	23:00	0.9	247.5	18/07/2021	23:00	1.8	112.5	19/07/2021	23:00	1.3	135	20/07/2021	23:00	0.4	90

Date	Time	Wind Speed (m/s)	Wind Direction												
21/07/2021	0:00	0.9	0	22/07/2021	0:00	0.9	90	23/07/2021	0:00	0.4	112.5	24/07/2021	0:00	1.3	45
21/07/2021	1:00	0.4	270	22/07/2021	1:00	1.8	90	23/07/2021	1:00	0.4	112.5	24/07/2021	1:00	1.3	315
21/07/2021	2:00	0.9	0	22/07/2021	2:00	1.3	112.5	23/07/2021	2:00	0.4	112.5	24/07/2021	2:00	0.9	112.5
21/07/2021	3:00	0.9	337.5	22/07/2021	3:00	1.3	112.5	23/07/2021	3:00	0.9	247.5	24/07/2021	3:00	0.9	112.5
21/07/2021	4:00	09	22.5	22/07/2021	4:00	1.8	112.5	23/07/2021	4:00	0.4	180	24/07/2021	4:00	0.4	45
21/07/2021	5:00	0.9	202.5	22/07/2021	5:00	0.9	112.5	23/07/2021	5:00	0.9	135	24/07/2021	5:00	0.9	112.5
21/07/2021	6:00	0.4	337.5	22/07/2021	6:00	0.4	112.5	23/07/2021	6:00	0	135	24/07/2021	6:00	0.9	112.5
21/07/2021	7:00	0.9	292.5	22/07/2021	7:00	0.4	112.5	23/07/2021	7:00	0	112.5	24/07/2021	7:00	0.9	135
21/07/2021	8:00	0.4	45	22/07/2021	8:00	0	112.5	23/07/2021	8:00	0	112.5	24/07/2021	8:00	1.3	45
21/07/2021	9:00	0.4	292.5	22/07/2021	9:00	0	45	23/07/2021	9:00	0.4	135	24/07/2021	9:00	1.3	45
21/07/2021	10:00	0.9	22.5	22/07/2021	10:00	0	90	23/07/2021	10:00	0.4	135	24/07/2021	10:00	1.8	22.5
21/07/2021	11:00	0.9	135	22/07/2021	11:00	0.9	90	23/07/2021	11:00	0.9	90	24/07/2021	11:00	1.3	45
21/07/2021	12:00	0.9	112.5	22/07/2021	12:00	0.4	112.5	23/07/2021	12:00	1.3	90	24/07/2021	12:00	0	247.5
21/07/2021	13:00	0.9	90	22/07/2021	13:00	0.9	337.5	23/07/2021	13:00	1.3	112.5	24/07/2021	13:00	0	225
21/07/2021	14:00	1.3	90	22/07/2021	14:00	0.4	270	23/07/2021	14:00	1.3	112.5	24/07/2021	14:00	1.3	247.5
21/07/2021	15:00	0.9	112.5	22/07/2021	15:00	0.4	45	23/07/2021	15:00	0.9	112.5	24/07/2021	15:00	0.9	225
21/07/2021	16:00	1.3	112.5	22/07/2021	16:00	0.4	292.5	23/07/2021	16:00	0.9	135	24/07/2021	16:00	0.9	247.5
21/07/2021	17:00	1.3	112.5	22/07/2021	17:00	0	270	23/07/2021	17:00	1.3	90	24/07/2021	17:00	0.4	247.5
21/07/2021	18:00	0.9	112.5	22/07/2021	18:00	0.4	270	23/07/2021	18:00	0.4	180	24/07/2021	18:00	0.4	247.5
21/07/2021	19:00	0.9	315	22/07/2021	19:00	0	270	23/07/2021	19:00	0.4	67.5	24/07/2021	19:00	0.4	247.5
21/07/2021	20:00	0.9	0	22/07/2021	20:00	0	112.5	23/07/2021	20:00	0.4	67.5	24/07/2021	20:00	0	247.5
21/07/2021	21:00	0.4	0	22/07/2021	21:00	0.4	247.5	23/07/2021	21:00	0.9	112.5	24/07/2021	21:00	0.4	112.5
21/07/2021	22:00	0.9	315	22/07/2021	22:00	0.9	247.5	23/07/2021	22:00	0.9	22.5	24/07/2021	22:00	0.9	270
21/07/2021	23:00	1.8	22.5	22/07/2021	23:00	1.3	247.5	23/07/2021	23:00	1.3	90	24/07/2021	23:00	0.4	292.5

Date	Time	Wind Speed (m/s)	Wind Direction												
25/07/2021	0:00	0.4	67.5	26/07/2021	0:00	0.9	45	27/07/2021	0:00	0.9	90	28/07/2021	0:00	0.9	90
25/07/2021	1:00	0.4	157.5	26/07/2021	1:00	1.8	292.5	27/07/2021	1:00	1.3	90	28/07/2021	1:00	0.9	112.5
25/07/2021	2:00	1.3	90	26/07/2021	2:00	0.9	22.5	27/07/2021	2:00	1.8	67.5	28/07/2021	2:00	1.3	67.5
25/07/2021	3:00	2.2	90	26/07/2021	3:00	0.9	315	27/07/2021	3:00	1.8	67.5	28/07/2021	3:00	1.3	67.5
25/07/2021	4:00	1.8	90	26/07/2021	4:00	1.3	337.5	27/07/2021	4:00	1.3	90	28/07/2021	4:00	1.3	45
25/07/2021	5:00	2.7	67.5	26/07/2021	5:00	0.9	22.5	27/07/2021	5:00	1.8	45	28/07/2021	5:00	2.2	45
25/07/2021	6:00	2.2	90	26/07/2021	6:00	2.2	90	27/07/2021	6:00	2.7	90	28/07/2021	6:00	1.3	45
25/07/2021	7:00	1.8	45	26/07/2021	7:00	1.8	90	27/07/2021	7:00	1.8	67.5	28/07/2021	7:00	1.3	67.5
25/07/2021	8:00	2.2	45	26/07/2021	8:00	1.8	90	27/07/2021	8:00	1.3	0	28/07/2021	8:00	1.8	22.5
25/07/2021	9:00	2.2	67.5	26/07/2021	9:00	1.8	90	27/07/2021	9:00	1.3	112.5	28/07/2021	9:00	1.8	67.5
25/07/2021	10:00	2.7	45	26/07/2021	10:00	2.2	90	27/07/2021	10:00	0.9	90	28/07/2021	10:00	1.3	0.4
25/07/2021	11:00	1.3	0	26/07/2021	11:00	2.2	90	27/07/2021	11:00	1.3	67.5	28/07/2021	11:00	0.4	0.4
25/07/2021	12:00	0.9	90	26/07/2021	12:00	1.3	67.5	27/07/2021	12:00	1.8	112.5	28/07/2021	12:00	0.4	0.4
25/07/2021	13:00	0.9	67.5	26/07/2021	13:00	0.4	112.5	27/07/2021	13:00	0.4	112.5	28/07/2021	13:00	0.4	0.4
25/07/2021	14:00	1.3	112.5	26/07/2021	14:00	0.4	270	27/07/2021	14:00	0.9	112.5	28/07/2021	14:00	0.9	1.3
25/07/2021	15:00	0.9	90	26/07/2021	15:00	0.4	225	27/07/2021	15:00	0.9	112.5	28/07/2021	15:00	0.4	1.3
25/07/2021	16:00	1.3	112.5	26/07/2021	16:00	0.4	225	27/07/2021	16:00	1.3	90	28/07/2021	16:00	0.4	1.3
25/07/2021	17:00	0.9	112.5	26/07/2021	17:00	1.3	247.5	27/07/2021	17:00	0.9	90	28/07/2021	17:00	0.9	0.4
25/07/2021	18:00	0.9	90	26/07/2021	18:00	2.2	225	27/07/2021	18:00	0.9	112.5	28/07/2021	18:00	0.9	0.4
25/07/2021	19:00	0.4	112.5	26/07/2021	19:00	0.4	112.5	27/07/2021	19:00	0.9	112.5	28/07/2021	19:00	0.9	0.9
25/07/2021	20:00	0.4	45	26/07/2021	20:00	0.4	270	27/07/2021	20:00	1.3	112.5	28/07/2021	20:00	0.4	0.4
25/07/2021	21:00	0.9	90	26/07/2021	21:00	0.4	225	27/07/2021	21:00	1.8	112.5	28/07/2021	21:00	0.4	1.3
25/07/2021	22:00	0.9	135	26/07/2021	22:00	0.4	225	27/07/2021	22:00	0.4	112.5	28/07/2021	22:00	0.4	0.4
25/07/2021	23:00	1.3	135	26/07/2021	23:00	1.3	247.5	27/07/2021	23:00	0.9	112.5	28/07/2021	23:00	0.9	0.4

Date	Time	Wind Speed (m/s)	Wind Direction	Date	Time	Wind Speed (m/s)	Wind Direction	Date	Time	Wind Speed (m/s)	Wind Direction	Date	Time	Wind Speed (m/s)	Wind Direction
29/07/2021	0:00	1.3	67.5	30/07/2021	0:00	1.8	67.5	31/07/2021	0:00	1.3	67.5				
29/07/2021	1:00	0.9	45	30/07/2021	1:00	1.8	90	31/07/2021	1:00	1.8	67.5				
29/07/2021	2:00	0.9	45	30/07/2021	2:00	1.8	0	31/07/2021	2:00	1.8	45				
29/07/2021	3:00	0.9	90	30/07/2021	3:00	1.8	0	31/07/2021	3:00	1.8	135				
29/07/2021	4:00	0.4	337.5	30/07/2021	4:00	2.2	22.5	31/07/2021	4:00	1.8	90				
29/07/2021	5:00	1.3	0	30/07/2021	5:00	1.8	22.5	31/07/2021	5:00	3.1	90				
29/07/2021	6:00	1.3	22.5	30/07/2021	6:00	1.3	90	31/07/2021	6:00	3.1	90				
29/07/2021	7:00	1.3	22.5	30/07/2021	7:00	1.3	90	31/07/2021	7:00	2.2	90				
29/07/2021	8:00	0.9	45	30/07/2021	8:00	0.9	270	31/07/2021	8:00	1.8	112.5				
29/07/2021	9:00	1.8	90	30/07/2021	9:00	1.3	45	31/07/2021	9:00	2.2	90				
29/07/2021	10:00	2.2	112.5	30/07/2021	10:00	1.3	0	31/07/2021	10:00	2.2	135				
29/07/2021	11:00	1.3	135	30/07/2021	11:00	0.9	247.5	31/07/2021	11:00	1.8	67.5				
29/07/2021	12:00	1.8	112.5	30/07/2021	12:00	1.3	315	31/07/2021	12:00	1.8	67.5				
29/07/2021	13:00	1.3	112.5	30/07/2021	13:00	1.3	135	31/07/2021	13:00	2.7	45				
29/07/2021	14:00	1.3	112.5	30/07/2021	14:00	0.9	90	31/07/2021	14:00	0.4	90				
29/07/2021	15:00	1.3	90	30/07/2021	15:00	0.9	135	31/07/2021	15:00	0.4	90				
29/07/2021	16:00	1.3	67.5	30/07/2021	16:00	0.9	0	31/07/2021	16:00	0.4	112.5				
29/07/2021	17:00	1.8	90	30/07/2021	17:00	1.3	22.5	31/07/2021	17:00	0.4	67.5				
29/07/2021	18:00	1.3	90	30/07/2021	18:00	1.8	112.5	31/07/2021	18:00	0.4	270				
29/07/2021	19:00	1.3	90	30/07/2021	19:00	0.9	157.5	31/07/2021	19:00	0.9	112.5				
29/07/2021	20:00	1.3	90	30/07/2021	20:00	1.3	45	31/07/2021	20:00	0.4	247.5				
29/07/2021	21:00	1.8	112.5	30/07/2021	21:00	0.9	112.5	31/07/2021	21:00	0.9	90				
29/07/2021	22:00	1.3	112.5	30/07/2021	22:00	1.3	112.5	31/07/2021	22:00	0.4	90				
29/07/2021	23:00	1.8	112.5	30/07/2021	23:00	0.9	67.5	31/07/2021	23:00	0.4	90				

Appendix $G-24$ -hr TSP monitoring results and graphical presentation	l

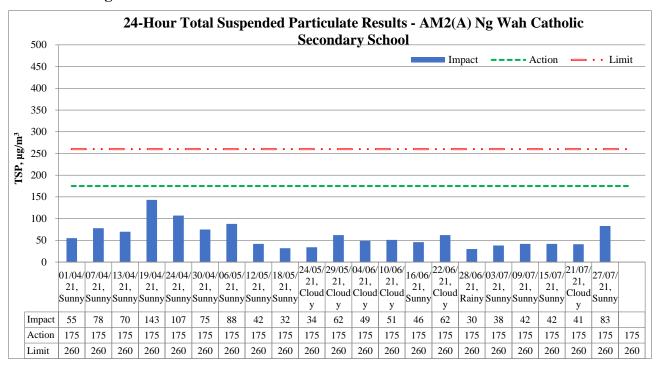
Location: AM2(A) – Ng Wah Catholic Secondary School

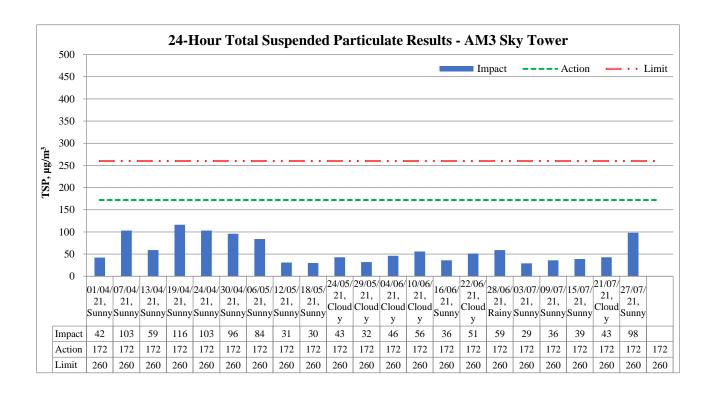
Start Date	Weather	Air Temp.	Atmospheric Pressure	Filter we	eight (g)	Particulate	Elapse	e Time	Sampling Time	Flow (cf		Av. Flow	Total vol.	Conc.
		(°C)	(hPa)	Initial	Final	weight (g)	Initial	Final	(min)	Initial	Final	(m <sup>3</sup> /min)	$(m^3)$	$(\mu g/m^3)$
3/7/2021	Sunny	32.9	1006.4	18.3284	18.4081	0.0797	5692.36	5716.37	1441	50	50	1.44	2072	38
9/7/2021	Sunny	32.2	1010.3	15.8293	15.9163	0.0870	5716.97	5740.97	1440	50	50	1.44	2078	42
15/7/2021	Sunny	31.7	1008.9	15.4497	15.5365	0.0868	5741.51	5765.53	1441	50	50	1.44	2080	42
21/7/2021	Cloudy	28.3	1003.1	15.2094	15.2952	0.0858	5765.95	5789.96	1441	50	50	1.45	2085	41
27/7/2021	Sunny	32.2	996.8	18.4200	18.5871	0.1671	5790.95	5814.95	1440	50	50	1.43	2063	83
												Maxim	num	83
												Minim	num	38
												Avera	age	49
												Action I	Level	175
												Limit L	evel	260

Location: AM3 – Sky Tower

Start Date	Weather	Air Temp.	Atmospheric Pressure	Filter w	eight (g)	Particulate	Elapse	e Time	Sampling Time	Flow (cf		Av. Flow	Total vol.	Conc.
		$(^{\circ}\mathbb{C})$	(hPa)	Initial	Final	weight (g)	Initial	Final	(min)	Initial	Final	(m³/min)	$(m^3)$	$(\mu g/m^3)$
3/7/2021	Sunny	28.9	1006.4	15.2122	15.2741	0.0619	3149.21	3173.24	1442	52	52	1.47	2117	29
9/7/2021	Sunny	28.8	1010.3	15.2855	15.3641	0.0786	3174.35	3198.38	1442	54	54	1.53	2208	36
15/7/2021	Sunny	31.7	1008.9	15.2474	15.3309	0.0835	3198.97	3222.99	1441	52	52	1.47	2124	39
21/7/2021	Cloudy	29.2	1003.1	14.9891	15.0805	0.0914	3223.47	3247.49	1441	52	52	1.48	2130	43
27/7/2021	Sunny	26.2	996.8	18.4772	18.6815	0.2043	3249.04	3273.06	1441	52	52	1.46	2109	98
												Maxi	mum	98
												Minii	mum	29
												Avei	rage	49
												Action	Level	172
												Limit	Level	260

#### 24-hour average TSP





		Reportir	ng Period	
Major Construction Activities	Apr	May	Jun	July
	2021	2021	2021	2021
Construction of box culvert	✓	✓	✓	
Bored pile works for landscape elevated walkway	✓	✓	✓	✓
Demolition of existing structure and cottage	✓			
Construction of project signboard	✓			
Pre-drilling works and trial pit excavation	✓	✓	✓	
Drainage works	✓			
Temporary road diversion at Sa Po Road		✓	✓	
Demolition of existing structure at SB-01		✓		
Pre-drilling work for S14 and KS10		✓		
Drainage works for Pedestrian Street No.1 & No.2		✓	✓	
Drainage works for Crowd Dispersal Route		✓	✓	
Instrumentation installation at SB-01			✓	<b>✓</b>
Pre-drilling work for S14			✓	✓
Removal existing piles at Road D1			✓	✓
Rising main construction			✓	✓
Trial pit excavation				<b>√</b>
Advance works for traffic diversion at Sa Po Road				✓
Drainage works for Pedestrian Street No.1, No,2 & No.3				<b>√</b>
Construction of Crowd Dispersal Route				<b>√</b>

		Reportin	g Period	
Factors might affect the monitoring results	Apr 2021	May 2021	Jun 2021	July 2021
Non-project related construction activities in the adjacent construction sites were observed.	✓	<b>✓</b>	✓	✓

$\label{eq:Appendix H-1-hr} \textbf{Appendix H-1-hr TSP monitoring results and graphical presentation}$

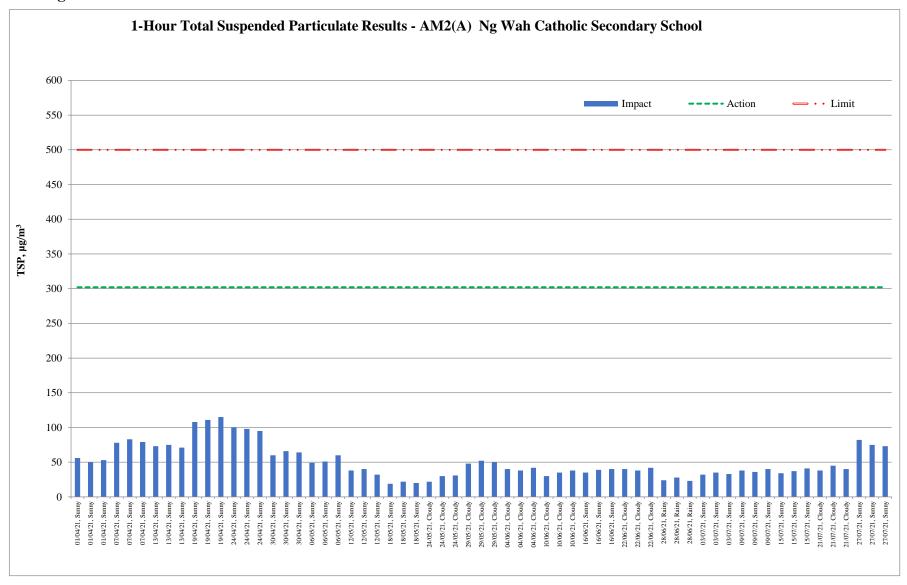
Location:
AM2(A) Ng Wah Catholic
Secondary School

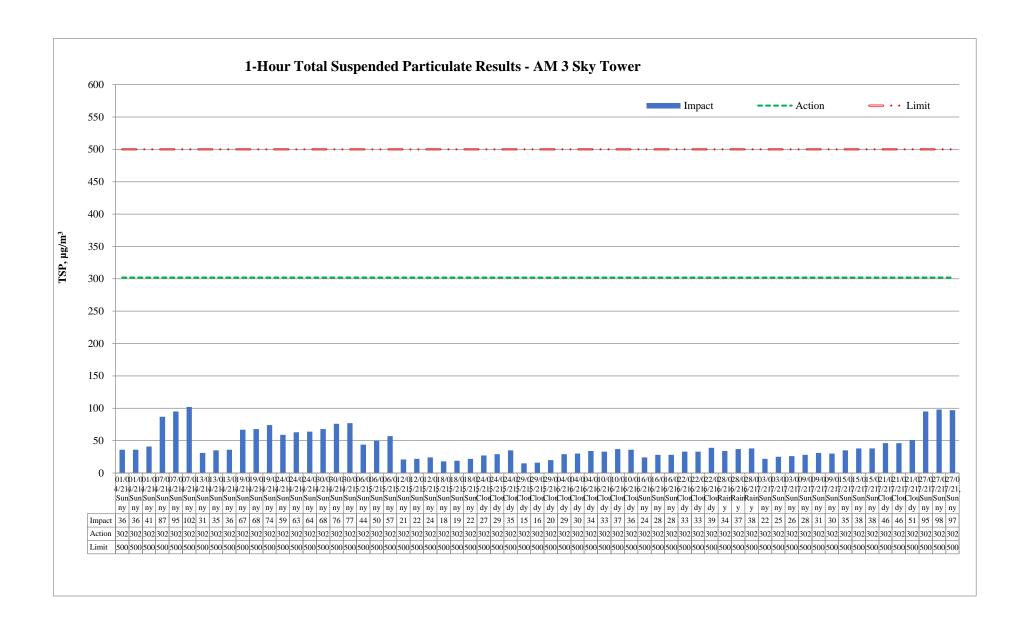
Date		sure eric	ment od	1-hr TSP concentration, μg/m <sup>3</sup>	Weather			
	9:00	-	10:00	32				
03/07/2021	10:00	-	11:00	35	Sunny			
	11:00	-	12:00	33				
	13:00	-	14:00	38				
09/07/2021	14:00	-	15:00	36	Sunny			
	15:00	-	16:00	40				
	9:00	-	10:00	34				
15/07/2021	10:00	-	11:00	37	Sunny			
	11:00	-	12:00	41				
	9:00	-	10:00	38				
21/07/2021	10:00	-	11:00	45	Cloudy			
	11:00	-	12:00	40				
	13:00	-	14:00	82				
27/07/2021	14:00	-	15:00	75	Sunny			
	15:00	-	16:00	73				
Maximum				82				
N	Iinimum			32				
A	Average	-		45				
Action Level				302				
Limit Level				500				

Location:
AM3 Sky Tower

Date		sure eric	ment od	1-hr TSP concentration, μg/m <sup>3</sup>	Weather
	9:00	-	10:00	22	
03/07/2021	10:00	-	11:00	25	Cloudy
	11:00	-	12:00	26	
	9:00	-	10:00	28	
09/07/2021	10:00	-	11:00	31	Cloudy
	11:00	-	12:00	30	
	13:00	-	14:00	35	
15/07/2021	14:00	-	15:00	38	Sunny
	15:00	-	16:00	38	
	13:00	-	14:00	46	
21/07/2021	14:00	-	15:00	46	Cloudy
	15:00	-	16:00	51	
	15:30	-	16:30	95	
27/07/2021	16:30	-	17:30	98	Rainy
	17:30	-	18:30	97	
M	laximum			98	
N	Iinimum			22	
1	Average			47	
Ac	tion Level	1		301	
Li	mit Level			500	

### 1-hour average TSP





Major Construction Activities		Reportin	g Period	
Major Construction Activities	Apr 2021	May 2021	Jun 2021	July 2021
Construction of box culvert	✓	✓	✓	
Bored pile works for landscape elevated walkway	✓	✓	✓	✓
Demolition of existing structure and cottage	✓			
Construction of project signboard	✓			
Pre-drilling works and trial pit excavation	✓	✓	<b>✓</b>	
Drainage works	✓			
Temporary road diversion at Sa Po Road		✓	<b>✓</b>	
Demolition of existing structure at SB-01		✓		
Pre-drilling work for S14 and KS10		✓		
Drainage works for Pedestrian Street No.1 & No.2		✓	✓	
Drainage works for Crowd Dispersal Route		✓	<b>✓</b>	
Instrumentation installation at SB-01			<b>✓</b>	✓
Pre-drilling work for S14			<b>✓</b>	✓
Removal existing piles at Road D1			<b>✓</b>	✓
Rising main construction			<b>✓</b>	✓
Trial pit excavation				✓
Advance works for traffic diversion at Sa Po Road				<b>√</b>
Drainage works for Pedestrian Street No.1, No,2 & No.3				<b>√</b>
Construction of Crowd Dispersal Route	-			<b>√</b>

	Reporting Period			ting Period
Factors might affect the monitoring results	Apr 2021	May 2021	Jun 2021	July 2021
Non-project related construction activities in the adjacent construction sites were observed.	✓	✓	✓	✓

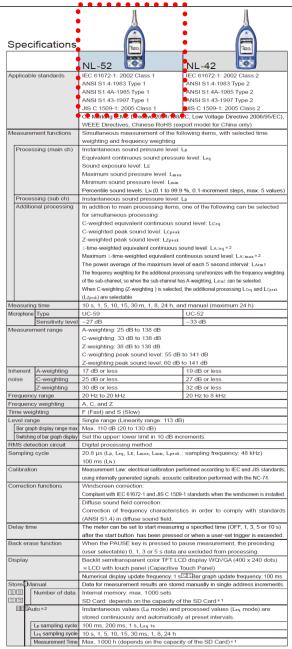
# Appendix I – Event and Action Plan for air quality

T- 4		Ac	tion	
Event	ET	IEC	Supervisor / ER	Contractor
Action Level being exceeded by one sampling	<ol> <li>Identify source and investigate the causes of exceedance;</li> <li>Inform Contractor, IEC and Supervisor /ER;</li> <li>Repeat measurement to confirm finding.</li> </ol>	<ol> <li>Check monitoring data submitted by ET;</li> <li>Check Contractor's working method.</li> </ol>	1. Notify Contractor.	<ol> <li>Rectify any unacceptable practice;</li> <li>Amend working methods if appropriate.</li> </ol>
Action Level being exceeded by two or more consecutive sampling	1. Identify source and investigate the causes of exceedance;  2. Inform Contractor, IEC and Supervisor /ER;  3. Increase monitoring frequency to daily;  4. Discuss with IEC and Contractor on remedial actions required;  5. Assess the effectiveness of Contractor's remedial actions;  6. If exceedance continues, arrange meeting with IEC and Supervisor /ER;  7. If exceedance stops, cease	remedial measures; 4. Advise the Supervisor /ER on the effectiveness of the proposed remedial	<ol> <li>Confirm receipt of notification of exceedance in writing;</li> <li>Notify Contractor;</li> <li>In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>Supervise implementation of remedial measures;</li> <li>Conduct meeting with ET and IEC if exceedance continues.</li> </ol>	<ol> <li>Discuss with ET and IEC on proper remedial actions;</li> <li>Submit proposals for remedial actions to Supervisor /ER and IEC within three working day of notification;</li> <li>Implement the agreed proposals;</li> <li>Amend proposal if appropriate.</li> </ol>
Limit Level being exceeded by one sampling	additional monitoring.  1. Identify source and investigate the causes of exceedance;  2. Inform Contractor, IEC, Supervisor /ER, and EPD;  3. Repeat measurement to confirm finding;  4. Assess effectiveness of	<ol> <li>Check monitoring data submitted by ET;</li> <li>Check Contractor's working method;</li> <li>Discuss possible remedial measures with ET and Contractor;</li> <li>Advise the Supervisor /ER</li> </ol>	Confirm receipt of notification of exceedance in writing;     Notify Contractor;     In consolidation with the IEC, agree with the Contractor on the remedial measures to be	Take immediate action to avoid further exceedance;     Discuss with ET and IEC on proper remedial actions;     Submit proposal for remedial actions to Supervisor /ER and IEC

T. 4		Action				
Event	ET	IEC	Supervisor / ER	Contractor		
	Contractor's remedial actions and keep EPD, IEC and Supervisor /ER informed of the results.	on the effectiveness of the proposed remedial measures.	<ul> <li>implemented;</li> <li>4. Supervise implementation of remedial measures;</li> <li>5. Conduct meeting with ET and IEC if exceedance continues.</li> </ul>	within three working days of notification; 4. Implement the agreed proposals.		
Limit Level being exceeded by two or more consecutive sampling	<ol> <li>Notify IEC, Supervisor /ER, Contractor and EPD;</li> <li>Repeat measurement to confirm findings;</li> <li>Carry out analysis of Contractor's working procedures to identify source and investigate the causes of exceedance;</li> <li>Increase monitoring frequency to daily;</li> <li>Arrange meeting with IEC, Supervisor /ER and Contractor to discuss the remedial action to be taken;</li> <li>Assess effectiveness of Contractor's remedial actions and keep EPD, IEC and Supervisor /ER informed of the results;</li> <li>If exceedance stop, cease</li> </ol>	submitted by ET; 2. Check Contractor's working method;	<ol> <li>Confirm receipt of notification of exceedance in writing;</li> <li>Notify Contractor;</li> <li>In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>Supervise implementation of remedial measures;</li> <li>If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.</li> </ol>	<ol> <li>Take immediate action to avoid further exceedance;</li> <li>Discuss with ET and IEC on proper remedial actions;</li> <li>Submit proposal for remedial actions to Supervisor /ER and IEC within three working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Submit further remedial actions if problem still not under control;</li> <li>Stop the relevant portion of works as instructed by the Supervisor /ER until the exceedance is abated.</li> </ol>		

 $\label{eq:continuous} \begin{tabular}{ll} Appendix J-Calibration certificates, catalogue of noise monitoring \\ equipment \end{tabular}$ 

#### Catalogue of Sound Level Meter



Data n	ecall		Allows viewing of stored data		
Setup	memory	/	Up to five setup configurations can be saved in internal memory, for later recall		
			Start up via file settings previously stored on SD card possible		
Wavefo	orm record	ding *3	The state of the s		
File	format		Uncompressed waveform WAVE file		
San	npling free	quency	Select 48 kHz. 24 kHz or 12 kHz		
Dat	ta length	,	Select 24 bit or 16 bit		
Outputs	DC out	put	Output DC signals using a frequency weighting characteristic selected by processing		
	Outp	ut voltage	2.5 V, 25 mV / dB at bar graph display full scale		
	AC out	put	Output AC signals using a frequency weighting characteristic selected by		
			processing or by A, C, Z-weighting.		
	Outp	ut voltage	1 ∨ (rms values) at bar graph display full scale		
	Compa	rator	Turns on when the open-collector output exceeds the set value		
	output*	×2	(max. applied voltage 24 √, max. current 60 mA, allowable dissipation 300 mW)		
USB	[2]		Allows USB to be connected to a computer and recognized as a removable dis		
22 20 20			Allows USB to be controlled via communication commands		
RS-23	2C com	munication	Allows for RS-232C communication via use of a dedicated cable		
Data c	ontinuou	s output*2			
Тур	e of Inst	lantaneous value	Lp		
dat	a Pro	cessed value	Leq, Lmax, Lmin, Lpeak		
Out	tput inte	rval	100 ms		
Print o	out		Printing of measurement results on dedicated printer DPU-414		
Power	require	ments	Four IEC R6 (size AA) batteries (alkaline or rechargeable batteries) or external power supply		
Bat	tery life	(23°C)	Alkaline battery LR6 (AA): 26 h Ni-MH secondary battery: 25 h		
			At the maximum *Depends on the setting		
AC	adapter		NC-98C (NC-34 for previous models cannot be used)		
Ext	emal po	wer voltage	5 to 7 V (rated voltage: 6 V)		
Cui	rrent cor	sumption	Approximately 90 mA (normal operation, rated voltage)		
Ambie	nt Te	mperature	−10 to +50 °C		
conditi	ons Hu	umidity	10 to 90 % RH (non-condensing)		
Dustpr	oof / wat	er-resistant	IP code: IP54 (except for microphone)		
perforr	mance*4	1	See precautions regarding waterproofing		
Dimen	isions, w	/eight	Approx. 250 (H) x 76 (W) x 33 mm(D), approx. 400 g (with batteries)		
Suppli	ed acce	ssories	Storage case x 1, Windscreen WS-10 x 1, Windscreen fall prevention rubber x 1,		
			Hand strap x 1, LR6 (AA) alkaline batteries x 4, SD card 512 MB×1 (NX-42EX		
			preinstalled model only)		

Product name	Product number
Extended function program (Inst.on 512 MB SD card)	NX-42EX
Waveform recording program*2 (Inst.on 2 GB SD card)	NX-42WR
Octave, 1/3 octave real-time analysis program*2 (Inst.on 512 MB SD card)	NX-42RT
FFT analysis program *2 (Inst.on 512 MB SD card)	NX-42FT
Data management software for environmental measurement	AS-60
Data management software for environmental measurement (Includes the octave and 1/3 octave data management software)	AS-60RT
Data management software for environmental measurement (Includes the vibration level data management software)	AS-60VM
Waveform analysis software	CAT-WAVE
SD Card 512 MB	SD-512M
SD Card 2 GB	SD-2G
AC adapter (100 ∨ to 240 ∨)	NC-98C
Battery pack	BP-21
Microphone extension cables	EC-04 (from 2 m)
BNC-Pin output code	CC-24
Comparator output cable	CC-42C
Printer	DPU-414
Printer cable	CC-42P
RS 232C serial I/O cable	CC-42R
USB cable	
Sound calibrator	NC-74
All-weather windscreen	WS-15
Windscreen mounting adapter	WS-15006
Rain-protection windscreen	WS-16
Sound level meter tripod	ST-80
All-weather windscreen tripod	ST-81

\*4 Protection against harmful dust and water splashing from any direction.

Before use, verify that the rubber bottom cover and the battery compartment lid are firmly closed. To maintain the water and dust proof rating, internal packing replacement is required every two years (at



RION CO., LTD.

3-20-41, Higashimotomachi, Kokubunji, Tokyo 185-8533, Japan Tel: +81-42-359-7888 Fax: +81-42-359-7442

This product is environment-friendly. It does not include toxic chemicals on our policy.

This product is certified to an International Protection rating of IP54 (dust protected and resistant to splashing water).
This leaffet is printed with environmentally friendly vegetable-based ink on recycled paper.

1011-4 E 212.P.D

#### Calibration Certificate of Sound Level Meter



中国赛宝实验室计量检测中心 (工业和信息化部电子第五研究所计量检测中心) CHINA CEPREI LABORATORY CALIBRATION & TESTING CENTRE

# CALIBRATION CERTIFICATE

证书编号: 2HB20001302-0001 Certificate No.





委托单位: Client	Ca	stco Testing Centre Limi	ted
仪器名称: Description		Sound Level Meter	
型号规格: Model/Type		NL-52	
制造商: Manufacturer	<u> </u>	RION	
机身号: Serial No.		01232551	
管理号:		AAST-SLM-05	
Asset No. 接收日期: Rec. Date	2020-08-07	校准日期: Cal. Date	2020-08-10
签发日期: _ App. Date	2020-08-10	建议校准周期: Reference Cal. Perio	12个月(12 Months) od
结论: Conclusion	所校准项	目合格(Passed at Calibra	tion Items)

Approved by

赛宝计量检测中心 广州总部地址:广州天河区东莞庄路110号 客服电话: 020-87237633 传真: 020-87236189 投诉电话: 020-87236896 邮件: cal@ceprei.com 同址: www.ceprei-cal.com

印章: Stamp

CEPREI Calibration and Testing Centre H.Q. Addr: No.110, Dongguanzhuang Road, Tianhe District, Guangzhou Service Tel: 020-87237633 Fax: 020-87236189

Complaint Tel: 020-87236896 Email: cal@ceprei.com Website: www.ceprei-cal.com

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# DIRECTIONS

1. 本机构质量管理体系符合ISO/IEC 17025的要求,获得中国合格评定国家认可委员会(CNAS)认 可, 认可证书号为: CNAS L13344。

This laboratory quality management system meets the ISO/IEC 17025 and is accredited by the China National Accreditation Service for Conformity Assessment, No. CNAS L13344.

- 2. 本次校准的技术依据及CNAS认可范围(Reference documents and CNAS accredited scopes):
- JJG 188-2017 声级计检定规程: Sound pressure level: (20~130)dB: Frequency Weighting: (20~130)dB@(10
- \*详细内容请查看CNAS网站中注册编号为L13344的证书期件,超出范围的内容未被认可。(Please see the attachment of certificate No. L13344 at CNAS website for details, beyond which is not accredited
- 3. 本次校准所使用的主要测量标准(The main measurement standards used during the calibration): 证书号/有效期/溯源单位

名 称 (Description) (Specification) (Certificate No./Due Date/Traceability to) f: ±1mHz: 失真度: <-70dB DCV:±0.0035%; ACV:±0.06%; DCI:±0.05%; ACI:±0.1%; R:±0.01%; f:±0.01% 4GC19040057-0001/2020-11-05/赛宝 正弦信号发生器 4GC19040146-0127/2020-12-27/赛宝 GFJGJL1001200310165/2021-02-26/航空 U=0.3dB (k=2) 前置放大器 标准传声器 GFJGJL1001200310164/2021-02-26/航空 U=(0.05-0.12)dB(k=2) PULSE分析系统 4GC20000009-0001/2021-01-08/賽宝 頻率:Uref=0.001%,k=2;电压:Uref=0.04%,k=2 步进衰减器 4GC20000158-0012/2021-04-29/賽宝 1 235 多功能声学校准器 4EC19040004-0003/2020-11-25/新宝

- 4. 校准地点(The calibration place): 广州市天河区东莞庄路110号401楼振动声学室
- 5. 环境条件(Environmental conditions): 温度(Temperature): 24°C 相对湿度(Relative Humidity): 60%
- 6. 本证书中给出的扩展不确定度依据JJF1059.1-2012《测量不确定度的评定与表示》评定,由合成标 准不确定度乘以包含概率约为95%时对应的包含因子k得到。

The extended uncertainty given in this certificate is evaluated according to JJF1059.1-2012 "Evaluation and Expression of Uncertainty in Measurement", and is calculated by multiplying the combined standard uncertainty by the coverage factor k which corresponding to the coverage probability about 95%.

7. 证书中"P"、"合格"代表"测量结果在允许范围内","F"、"不合格"代表"测量结果不在允许范围内","N/A"代表"不适用"。本证书报告的判定规则和结论仅供参考,使用人员应结合实际测量的 要求合理使用,如考虑测量结果测量不确定度的影响等。

"P" and "Pass" in this certificate stand for "Low Limit≤the measured value ≤High Limit", "F" and "Fail" stand for "the measured value < Low Limit or the measured value > High Limit", "N/A" stands for "Not Applicable ". The judgment rules and conclusions of this certificate are for reference only. Users should use them reasonably according to the actual measurement requirements, such as considering the impact of measurement uncertainty, etc.

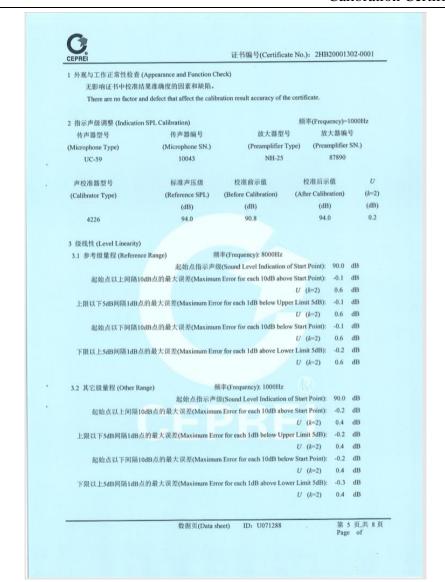
8. 建议校准周期是本实验室依据本证书报告的技术依据和仪器设备常规使用条件给出的建议,供委托方参考。委托方可以根据实际使用情况自行决定样品的建议校准周期。

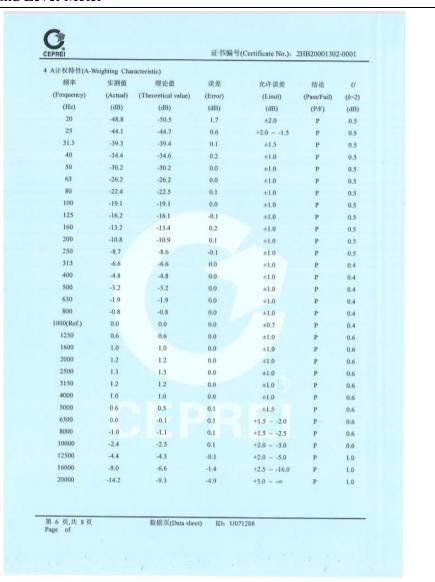
The reference calibration period is based on the reference documents and normal operating conditions of the calibrated instrument. It is only for reference. The client may decide the calibration period of the instrument according to the actual use.

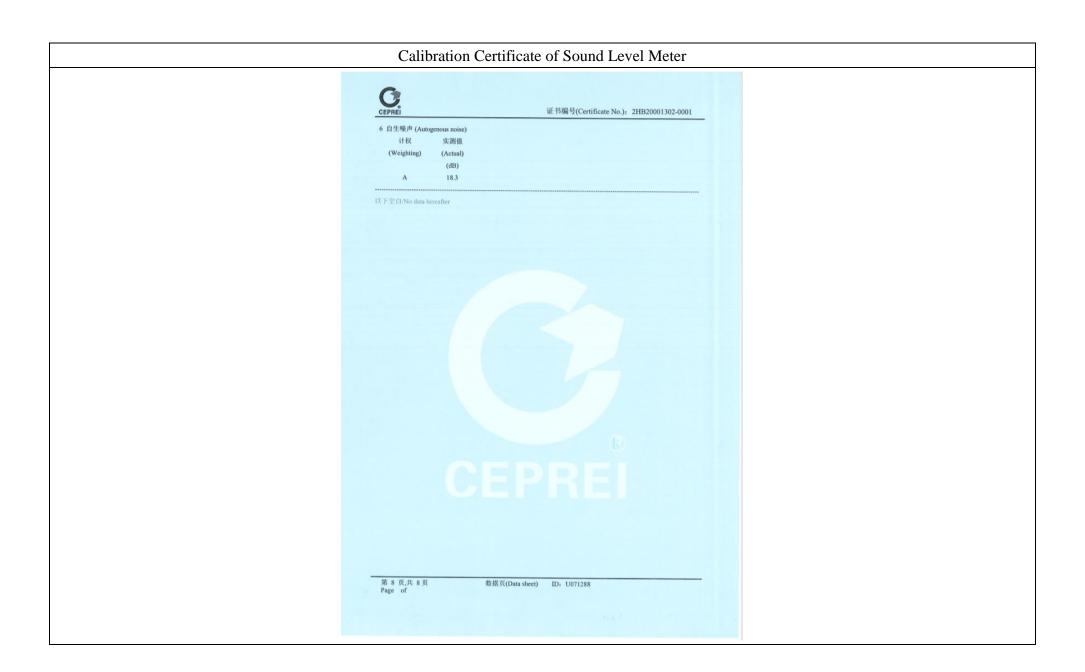
- 注: 1.本证书未经本机构书面授权,不得部分复制。(The certificate shall not be partly reproduced without written approval of the laboratory.)
- 2.本次校准结果仅与被校物有关。(The results are only related to the items calibrated.)

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#### Calibration Certificate of Sound Level Meter







#### Catalogue of Sound Calibrator

Sound Calibrator NC-75





Compact and lightweight sound calibrator allows highly reliable and accurate measurement anywhere

# Sound Calibrator **NC-75**



- Integrated newly developed reference microphone enables feedback control that completely eliminates the need for atmospheric pressure and coupler volume correction, resulting in highly accurate and reliable calibration.
- Effective coupler sound insulation (30 dB or higher') permits calibration also in relatively noisy environments.
  \*A-weighed sound level insulation performance measured with pink noise
- Each product comes standard with a JCSS Calibration Certificate, demonstrating high quality.
- Conforming with IEC 60942: 2017 class 1 and JIS C 1515: 2020
- Supports calibration of RION sound level meters compliant with IEC 61672-1: 2013, JIS C 1509-1: 2017 and JIS C 1516: 2014.
- Supports calibration of RION microphones and microphones of other manufacturers meeting the size specifications of IEC 61094-4.
- Supports 1-inch, 1/2-inch, and 1/4-inch microphones (1/4 inch with optional adapter)





How to use the adapter

#### ■ 1-inch microphones

To use the sound calibrator with 1-inch diameter microphones, remove the 1/2-inch microphone adapter.



#### ■ 1/2-inch microphones

To use the sound calibrator with 1/2-inch diameter microphones, the supplied 1/2-inch microphone adapter must be in place.



Make sure the 1/2-inch adapter is locked.

#### ■ 1/4-inch microphones

To use the sound calibrator with 1/4-inch diameter microphones, use the supplied 1/2-inch microphone adapter together with the optional 1/4-inch adapter.



Jsage example

Applicable standards	IEC 60942: 2017 class1, ANSI/ASA S1.40-2006 class1, JIS C 1515: 2020 class 1, CE marking, WEEE directive, Chinese RoHS
Supported microphones	Microphones made by RION and microphones made by other manufacturers that meet the IEC 61094-4 size specifications 1-inch microphones 1/2-inch microphones (with supplied adapter) 1/4-inch microphones (with optional adapter)
Nominal sound pressure level	94 dB
Sound pressure level tolerance	Max. ±0.20 dB
Nominal frequency	1 000 Hz
Frequency tolerance	Max. ±0.1%
THD + noise	Max. 1.0 % (22.4 Hz to 22.4 kHz)
Dimensions and weight	Approx. 42 mm (H) x 77 mm (W) x 70 mm (D), approx. 200 g
Power supply	IEC LR6 (size AA) alkaline battery x 2 IEC LR6 (size AA) nicket-hydride rechargeable battery ("eneloop pro" supported) x 2
Battery life	50 hours or more (using two alkaline batteries, continuous use
	50 hours or more (using two nickel-hydride rechargeable batteries [eneloop pro], continuous use)
Supplied accessories	Soft case x 1, 1/2-inch microphone adapter x 1, IEC LR6 (size AA) alkaline battery x 2, hand strap x 1, JCSS

\*RION standard ambient conditions: static pressure 101.325 kPa, ambient temperature 23 °C, relative humidity 50 %

Strap

Securely carry the unit with the supplied hand strap

Soft case



Calibration can be performed w

PISTONPHONE NC-72A
Specifications (under standard ambier





RION CO., LTD.

3-20-41, Higashimotomachi, Kokubunji, Tokyo 185-8533, Japan Tel: +81-42-359-7888 Fax: +81-42-359-7442

This product is environment-friendly. It does not include toxic chemicals on our policy.

This leaflet is printed with environmentally friendly UV ink.

1709-6 2003.P.D

#### Calibration Certificate of Sound Calibrator



委托单位: 仪器名称: Description 型号规格:

Model/Type 制造商:

Manufacture

机身号:

Serial No.

管理号:

Asset No.

接收日期:

签发日期:

App. Date 结论:

Conclusion

Rec. Date

中国赛宝实验室计量检测中心(工业和信息化部电子第五研究所计量检测中心) CHINA CEPREI LABORATORY CALIBRATION & TESTING CENTRE

# CALIBRATION CERTIFICATE

证书编号: 2HB20001561-0003 Certificate No.





Ca	stco Testing Centre Limi	ted
	Sound Level Calibrator	
	NC-75	
7 /	RION	
	34280310	
	AAST-SLC-07	
2020-09-08	校准日期:	2020-09-12
2020-09-12	Cal. Date 建议校准周期:	12个月(12 months)
所校准项	Reference Cal. Peri 目合格(Passed at Calibra	

Approved by

寒宝计量检测中心 广州总部地址:广州天河区东莞庄路110号 客服电话: 020-87237633 传真: 020-87236189 投诉电话: 020-87236896 邮件: cal@ceprei.com

同址: www.ceprei-cal.com

CEPREI Calibration and Testing Centre H.Q. Addr: No.110,Dongguanzhuang Road,Tianhe District,Guangzhou Service Tel: 020-87237633 Fax: 020-87236189 Complaint Tel: 020-87236896 Email: cal@ceprei.com

印章:

Stamp

Website: www.ceprei-cal.com

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# **DIRECTIONS**

1. 本机构质量管理体系符合ISO/IEC 17025:2017标准的要求,获得中国合格评定国家认可委员会( CNAS 认可,认可证书号为: CNAS L13344.

This laboratory quality management system meets the ISO/IEC 17025:2017 and is accredited by the China National

Accreditation Service for Conformity Assessment, No. CNAS L13344.

2. 本次校准的技术依据及CNAS认可范围(Reference documents and CNAS accredited scopes):

• JJG 176-2005 声校准器检定规程: Sound Pressure Level: 94dB、104dB、114dB、124dB(63Hz~8kHz): 94dB、104dB、114dB,(31.5Hz~16kHz): Frequency: 31.5Hz~16kHz; Harmonic Distortion: 0~10%, (20Hz~20

\* 详细内容请查看CNAS网站中注册编号为L13344的证书附件,超出范围的内容未被认可。(Please see the attachment of certificate No.

3. 本次校准所使用的主要测量标准(The main measurement standards used during the calibration):

名 称 (Description)	证书号/有效期/溯源单位 (Certificate No./Due Date/Traceability to)	技术指标 (Specification)	测量范围 (Measuring Range)
PULSE分析系统	LSvm2020-02491/2021-04-26/中国计量院	频率:Uref=0.001%,k=2;电压: Uref=0.04%,k=2	频率:0.001Hz~51.2kHz, 电压:(1×10 <sup>-5</sup> ~30)V
标准传声器	GFJGJL1001200310164/2021-02-26/航空 304所	U=(0.05-0.12)dB (k=2)	20Hz~20kHz
前置放大器	GFJGJL1001200310165/2021-02-26/航空	U=0.3dB (k=2)	(10~20000) Hz

4. 校准地点(The calibration place): 广州市天河区东莞庄路110号401楼振动声学室

5. 环境条件(Environmental conditions): 温度(Temperature): 24°C 相对湿度(Relative Humidity): 60%

6. 本证书中给出的扩展不确定度依据JJF1059.1-2012《测量不确定度的评定与表示》评定,由合成标 准不确定度乘以包含概率约为95%时对应的包含因子k得到。

The extended uncertainty given in this certificate is evaluated according to JJF1059.1-2012 "Evaluation and Expression of Uncertainty in Measurement", and is calculated by multiplying the combined standard uncertainty by the coverage factor k which corresponding to the coverage probability about 95%.

7. 证书中"P"、"合格"代表"测量结果在允许范围内","F"、"不合格"代表"测量结果不在允许范围内","N/A"代表"不适用"。本证书报告的判定规则和结论仅供参考,使用人员应结合实际测量的 要求合理使用,如考虑测量结果测量不确定度的影响等。

"P" and "Pass" in this certificate stand for "Low Limit; the measured value ≤High Limit", "F" and "Fail" stand for "the measured value <Low Limit of the measured value > High Limit", "N/A" stands for "Not Applicable ". The judgment rules and conclusions of this certificate are for reference only. Users should use them reasonably according to the actual measurement requirements, such as considering the impact of measurement uncertainty, etc.

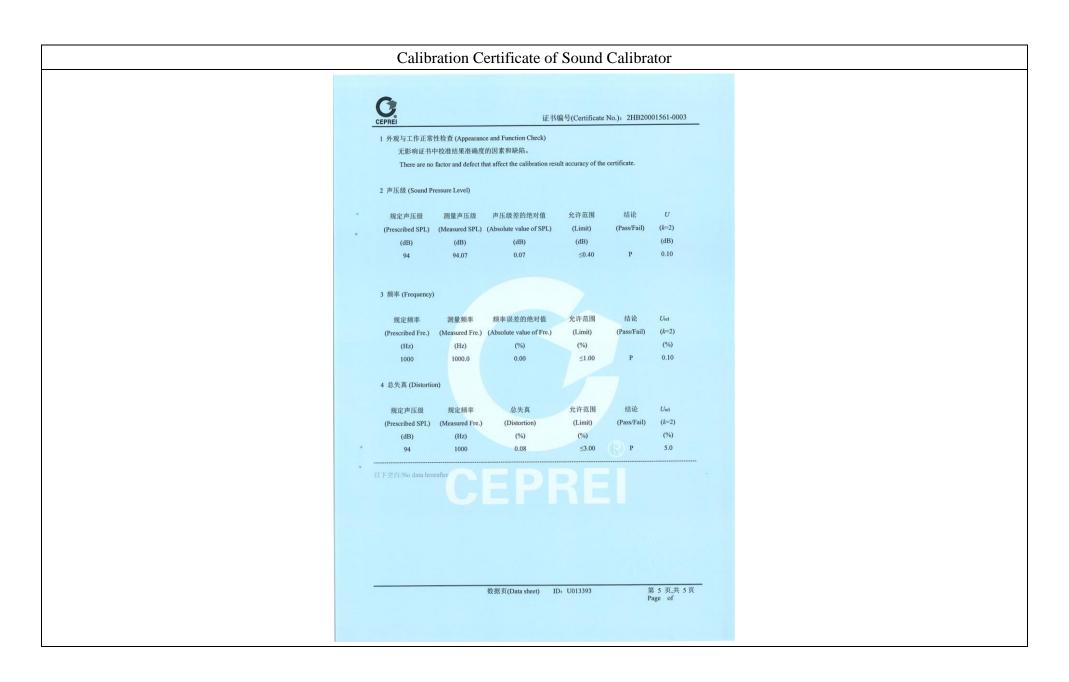
8. 建议校准周期是本实验室依据本证书报告的技术依据和仪器设备常规使用条件给出的建议,供委托方参考。委托方可以根据实际使用情况自行决定样品的建议校准周期。

The reference calibration period is based on the reference documents and normal operating conditions of the calibrated instrument. It is only for reference. The client may decide the calibration period of the instrument according to the

注: 1.本证书未经本机构书面授权,不得部分复制。(The certificate shall not be partly reproduced without written approval of the laboratory.)

2.本次校准结果仅与被校物有关。(The results are only related to the items calibrated.)

第 3 页,共 5 页 Page of



# Catalogue of Air Flow Meter (TSI TA440) **SPECIFICATIONS**

Velocity

Range (TA410) Range (TA430, TA440) Accuracy (TA410)162

0 to 20 m/s (0 to 4 000 ft/min) 0 to 30 m/s (0 to 6,000 ft/min) ±5% of reading or ±0.025 m/s (±5 ft/min), whichever is greater

Accuracy (TA430, TA440)<sup>162</sup> ±3% of reading or ±0.015 m/s (±3 ft/min), whichever is greater Resolution 0.01 m/s (1 ft/min)

Duct Size (TA430, TA440)

Dimensions 1 to 635 cm in increments of 0.1 cm (1 to 250 inches in increments of 0.1 in.)

Volumetric Flow Rate (TA430, TA440)

Actual range is a function of velocity, and duct size

Temperature

Range (TA410, TA430) -18 to 93°C (0 to 200°F) -10 to 60°C (14 to 140°F) Range (TA440) Accuracy<sup>3</sup> ±0.3°C (±0.5°F) Resolution 0.1°C (0.1°F)

Relative Humidity (TA440 only)

5 to 95% RH Range Accuracy<sup>4</sup> Resolution 0.1% RH

Wet Bulb Temperature (TA440 only)

5 to 60°C (40 to 140°F) Range Resolution 0.1°C (0.1°F)

Dew Point (TA440 only)

-15 to 49°C (5 to 120°F) Range Resolution 0.1°C (0.1°F)

Instrument Temperature Range

Operating (Electronics) 5 to 45°C (40 to 113°F) Model TA410, TA430 -18 to 93°C (0 to 200°F) -10 to 60°C (14 to 140°F) Model TA440

-20 to 60°C (-4 to 140°F) Storage

Data Storage Capabilities (TA430, TA440)

Logging Interval (TA430, TA440)

1 second to 1 hour



Airflow Instruments, TSI Instruments Ltd.
Visit our website at www.airflowinstruments.co.uk for more information.

Tel: +44 149 4 459200 Germany Tel: +49 241 523030 Tel: +33 491 11 87 64

P/N 2980548 Rev D (A4) ©2014 TSI Incorporates

Time Constant (TA430, TA440) User selectable

**External Meter Dimensions** 

8.4 cm x 17.8 cm x 4.4 cm (3.3 in. x 7.0 in. x 1.8 in.)

Meter Weight with Batteries

0.27 kg (0.6 lbs.)

Meter Probe Dimensions

Probe Length 101.6 cm (40 in.) Probe Diameter of Tip 7.0 mm (0.28 in.) Prohe Diameter of Base 13.0 mm (0.51 in.)

Articulating Section Length 19.7 cm (7.8 in.) Diameter of Articulating Knuckle 9.5 mm (0.38 in.)

**Power Requirements** 

Four AA-size batteries or AC adapter

	TA410	TA430, TA430-A	TA440, TA440-A	
Velocity range 0 to 20.00 m/s (0 to 4000 ft/min)	+			
Velocity range 0 to 30.00 m/s (0 to 6000 ft/min)		+	+	
Temperature	+	+	+	
Flow		+	+	
Humidity, wet bulb, dew point			+	
Probe	Straight	Straight or -A articulated	Straight or -A articulated	
Variable time constant		+	+	
Manual data logging		+	+	
Auto save data logging			+	
Statistics		+	+	
Review data		+	+	
LogDat2 downloading software		+	+	
Free Certificate	+	+	+	

er an air temperature range of 5 to 65°C (40 to 150°F).

#### Calibration Certificate of Air Flow Meter AAST-FLOW-03, Cal Best 2021/2/26 深圳市东华计量检测技术有限公司 CALIBRATION CERTIFICATE DH21AA002160001 Certificate No. 委托方名称: Castco Testing Centre Limited Client name 委托方地址: 33, On Kui Street, Fanling, N.T. Add.of Client 计量器具名称: 风速计 Name of Instrument 型号/规格: TA440 Type/Specification 制造单位: AIRFLOW Manufacturer 器具编号: AAST-FLOW-03/TA4401706003 Serial No. 接收日期: 月 02 Month 23 Date of Receipt Year 校准日期: 年 02 Date of calibration Year Month 批准人: 签发日期: 2021 年 02 月 26 日 Approved by Date of issue Year Month Day 核验员: 张吉庆 该二维码非公众号 Checked by (证书专用章) 校准员: 蒋新建 Stamp Calibrated by 扫码查证书信息(真伪) 计量校准机构备案号: 粤校备2017B010 Register No: 粤校备2017B010 Add: 1st Floor, Building A1, Puhua Science and Technology 地址:深圳市龙华区大浪街道同胜社区浦华科技园厂房 Park, Tongsheng Community, Dalang Street, Longhua District, Shenzhen, Guangdong, China 电话: 0755-28161768/28162768/28166778 Tel: 0755-28161768/28162768/28166778 传真: 0755-21004376 邮编: 518109 Fax: 0755-21004376 Zip Code: 518109 网址: www.szdhjl.com 电子邮箱: szdhjl@163.com http://www.szdhjl.com E-mail: szdhjl@163.com

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#### Calibration Certificate of Air Flow Meter



#### 深圳市东华计量检测技术有限公司

Shenzhen Donghua Metrology&Testing Technology Co., Ltd.

Certificate No.

DH21AA002160001

#### 证书说明

Certificate Statement

1、本校准证书包含的数据和信息仅对本次被校准的计量器具负责。

The calibration certificate contains data and information applies only to the calibrated instrument.

2、本公司仅对加盖我司的"证书专用章"的完整证书负责。

The company only Division I stamped "certificate special seal" is responsible for the full certificate.

3、未经本公司书面授权,不得部分复印证书。

The certificate shall not be photocopied without the written authorization of the company.

4、本次校准依据的技术文件:

Reference Documents for the Calibration:

JJG(建设)0001-1992 热球式风速仪计量检定规程

JJG(建设)0001-1992 Metrological Verification Regulation of Hot Ball shaped Anemmeter

5、本次校准所使用的主要计量标准器具:

Major standards of measurement used in the calibration:

设备名称 Equipment Name	测量范围 Measuring Range	不确定度/准确度等级 /最大允许误差 Uncertainty/AccuracyClass/ Maximum permissible Error	设备编号 Equipment No.	溯源机构/ 证书编号 Traceability to/ Certificate No.	溯源有效期 Traceability Due Date
补偿式微压计	(-2500~2500) Pa	=# DA	SM1926	上海市计量测试技术研究院 2018E21-20- 2637951001	2022-07-28
皮托管	(0~30) m/s		SM326	中国计量科学研究院 RGfv2019-0007	2024-01-20
机械式温湿度计	温度: (-20~80) C; 湿度: (0~ 100) %RH	MPE:温度: ±2°C, 湿 度;± (5~7)%	85926	深圳市计量质量检测研 究院 205605616	2021-05-10
空盒气压表	(800~1060)hPa	U=0.6hPa, k=2	15033115	深圳市计量质量检测研 究院 204373348	2021-08-17
标准水银温度计	(0~50)'e C	U=0.03℃, k=2	2-204	深圳市计量质量检测研 究院 205502058	2022-03-09

6、校准地点: 本公司力学实验室 Operation Location

> 7、环境条件: Operation Environment

温度 21.7 ℃

相对湿度



#### 深圳市东华计量检测技术有限公司

证书编号: DH21AA002160001

CertificateNo.

#### 校准结果

Result of Calibration

- 1、外观及工作正常性检查: 正常
- 2、校准结果:

	标准值 (m/s)	示值 (m/s)	示值误差 (m/s)	不确定! (k=2) U <sub>rel</sub>
	2.50	2.50	0.00 C	3%
an	3.00	2.99	-0.01	3%
HO	5.00	4.98	-0.02	3%
	10.00 HC	9.98	-0.02	3%
	15.00	14.96	-0.04	3%
	20.00	19.96	-0.04	HC 3%
	25.00	24.95	-0.05	3%

说明 (Explanation):

1、本次测量结果的不确定度(k=2)。

The uncertainty of the measurement result (k=2).

- 2、本次校准结果不确定度的评估和表述依据JJF1059.1的要求。
- The uncertainty of the calibration result is evaluated and expressed according to the requirement of JJF1059.1.
- 3、根据客户要求和所依据技术文件的规定,建议复校时间间隔不超过12个月。

According to customers' request and technical documents, the re-check time interval should not exceed 12 months

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$\label{eq:Appendix K-Noise monitoring results and graphical presentation} Appendix \ K-Noise monitoring results and graphical presentation$	

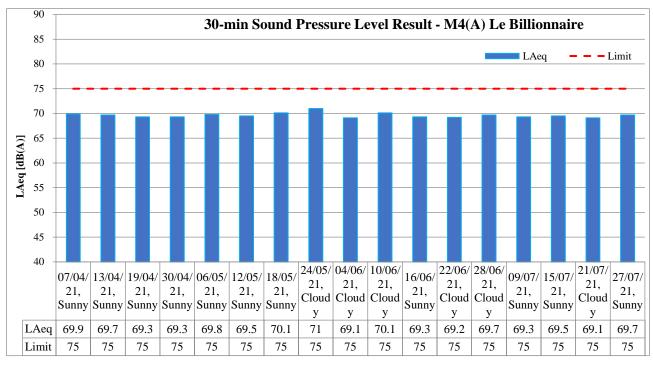
# M4(A) – Le Billionnaire

D.	Temp	XX7 .1		Measured Noise Level at M4(A), dB(A)						
Date	(°C)	Weather	7	Γiı	me	Baseline	$\mathcal{L}_{Aeq}$	LAeq LA10 LA90 Li		Limit
09/07/2021	32.2	Sunny	09:30	-	10:00	69.5	69.3	71.8	67.2	75
15/07/2021	31.7	Sunny	13:15	-	13:45	69.5	69.5	72.3	67.5	75
21/07/2021	28.3	Cloudy	10:15	1	10:45	69.5	69.1	70.8	67.4	75
27/07/2021	32.2	Sunny	09:16	-	09:46	69.5	69.7	70.7	68.6	75
					Maximum		69.7			
					Minimum		69.1			
					Average		69.4			

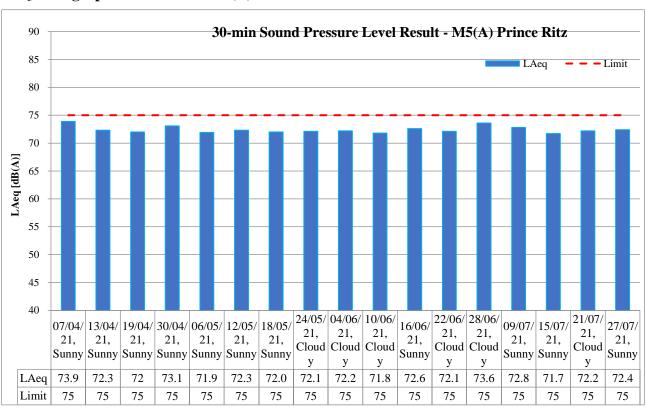
### M5(A) – Prince Ritz

- ( )											
Б.,	Temp	XX7 .1		Measured Noise Level at M5(A), dB(A)							
Date	Date $\binom{\text{remp}}{\binom{\circ}{C}}$ Weath	Weather	Г	iı	ne	Baseline	$\mathcal{L}_{Aeq}$	$L_{A10}$	$L_{A90}$	Limit	
09/07/2021	32.2	Sunny	10:35	-	11:05	72.5	72.8	74.3	70.8	75	
15/07/2021	31.7	Sunny	14:15	-	14:45	72.5	71.7	73.3	69.8	75	
21/07/2021	28.3	Cloudy	11:15	-	11:45	72.5	72.2	74.1	70.3	75	
27/07/2021	32.2	Sunny	10:19	-	10:49	72.5	72.4	74.0	70.6	75	
					Maximum		72.8				
								J			

#### L<sub>Aeq</sub>, 30-min graphical results of M4(A) – Le Billionnaire



### $L_{Aeq, 30-min}$ graphical results of M5(A) – Prince Ritz



		Reportin	g Period	
Major Construction Activities	Apr	May	Jun	July
	2021	2021	2021	2021
Construction of box culvert	✓	✓	✓	
Bored pile works for landscape elevated walkway	✓	✓	✓	✓
Demolition of existing structure and cottage	✓			
Construction of project signboard	✓			
Pre-drilling works and trial pit excavation	✓	✓	✓	
Drainage works	✓			
Temporary road diversion at Sa Po Road		✓	✓	
Demolition of existing structure at SB-01		✓		
Pre-drilling work for S14 and KS10		✓		
Drainage works for Pedestrian Street No.1 & No.2		✓	✓	
Drainage works for Crowd Dispersal Route		✓	✓	
Instrumentation installation at SB-01			✓	✓
Pre-drilling work for S14			✓	✓
Removal existing piles at Road D1			✓	✓
Rising main construction			✓	✓
Trial pit excavation				✓
Advance works for traffic diversion at Sa Po Road				✓
Drainage works for Pedestrian Street No.1, No,2 & No.3				✓
Construction of Crowd Dispersal Route				✓

	Reporting Period				
Factors might affect the monitoring results		May 2021	Jun 2021	July 2021	
Non-project related construction activities in the adjacent construction sites were observed.	<b>√</b>	<b>√</b>	<b>√</b>	✓	

# Appendix L – Event and Action Plan for noise

E4	Action					
Event	ET	IEC	Supervisor / ER	Contractor		
Action Level being exceeded	<ol> <li>Notify Supervisor / ER, IEC and Contractor;</li> <li>Carry out investigation;</li> <li>Report the results of investigation to the IEC, Supervisor / ER and Contractor;</li> <li>Discuss with the IEC and Contractor on remedial measures required;</li> <li>Increase monitoring frequency to check mitigation effectiveness.</li> <li>(The above actions should be taken within 2 working days after the exceedance is identified)</li> </ol>	1. Review the investigation results submitted by the ET;  2. Review the proposed remedial measures submitted by the Contractor and advise the ER accordingly;  3. Advise the Supervisor / ER on the proposed remedial measures.  (The above actions should be taken within 2 working days after the exceedance is identified.)	Confirm receipt of notification of failure in writing;     Notify Contractor;     In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;     Supervise the implementation of remedial measures.  (The above actions should be taken within 2 working days after the exceedance is identified.)	<ol> <li>Submit noise mitigation proposal to IEC and Supervisor / ER;</li> <li>Implement noise mitigation proposals.</li> <li>(The above actions should be taken within 2 working days after the exceedance is identified.)</li> </ol>		
Limit Level being exceeded	identified.)  1. Inform IEC, Supervisor /ER, Contractor and EPD;  2. Repeat measurement to confirm findings;  3. Increase monitoring frequency;  4. Identify source and investigate the cause of exceedance;  5. Carry out analysis of Contract's working procedure;  6. Discuss remedial measures required with the IEC, Contractor and Supervisor /ER;  7. Assess effectiveness of	1. Discuss the potential remedial actions with Supervisor /ER, ET and Contractor;  2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the Supervisor /ER accordingly.  (The above actions should be taken within 2 working days after the exceedance is identified.)	Confirm receipt of notification of failure in writing;     Notify Contractor;     In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;     Supervise the implementation of remedial measures;     If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the	<ol> <li>Take immediate action to avoid further exceedance;</li> <li>Submit proposals for remedial actions to IEC and Supervisor /ER within 3 working days of notification;</li> <li>Implement the agreed proposal;</li> <li>Submit further proposal if problem still not under control;</li> <li>Stop the relevant portion of works as instructed by the Supervisor /ER until the exceedance is abated.</li> <li>(The above actions should be</li> </ol>		

Event	Action						
Event	ET	IEC	Supervisor / ER	Contractor			
	Contractor's remedial		exceedance until the	taken within 2 working days			
	actions and keep IEC,		exceedance is abated.	after the exceedance is			
	EPD, and Supervisor /ER		(The above actions should be	identified.)			
	informed of the results;		taken within 2 working days after				
	8. If exceedance stops, cease		the exceedance is identified.)				
	additional monitoring.						
	(The above actions should be						
	taken within 2 working days						
	after the exceedance is						
	identified.)						

Appendix M – Event and Action Plan for Landscape and Visual Impact

Event		Act	ion	
Event	ET	IEC	Supervisor / ER	Contractor
Design Check	1. Check final design conforms to the requirements of EP and prepare report.	2. Recommend remedial	Undertake remedial design if necessary.	
Non-conformity on one occasion	<ol> <li>Identify Source.</li> <li>Inform IEC and Supervisor /ER.</li> <li>Discuss remedial actions with IEC, Supervisor /ER and Contractor.</li> <li>Monitor remedial actions until rectification has been completed.</li> </ol>	working method.  3. Discuss with ET and Contractor on possible remedial measures.	<ol> <li>Notify Contractor.</li> <li>Ensure remedial measures are properly implemented.</li> </ol>	Amend working methods.     Rectify damage and undertake any necessary replacement.
Repeated Non-conformity	<ol> <li>Identify Source.</li> <li>Inform IEC and Supervisor /ER.</li> <li>Increase monitoring frequency.</li> <li>Discuss remedial actions with IEC, Supervisor /ER and Contractor.</li> <li>Monitor remedial actions until rectification has been completed.</li> <li>If non-conformity stops, cease additional monitoring.</li> </ol>	method.  3. Discuss with ET and Contractor on possible remedial measures.  4. Advise Supervisor /ER on effectiveness of proposed remedial measures.	<ol> <li>Notify Contractor.</li> <li>Ensure remedial measures are properly implemented.</li> </ol>	Amend working methods.     Rectify damage and undertake any necessary replacement.

## Appendix N – Waste Flow Table

## MONTHLY SUMMARY WASTE FLOW TABLE FOR <u>2021</u> (YEAR)

Contract No. : <u>ED/2018/05</u>

	A	ctual Quantitie	es of Inert C&D	) Materials Gei	nerated Monthl	ly	Actu	al Quantities o	f C&D Wastes	Generated M	onthly
Month	Total Quantity Generated	Borken Concrete (4)	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Import Fill	Metals	Paper / Cardboard Packaging	Plastics (3)	Chemical Waste	Other, e.g. general refuse
	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m <sup>3</sup> ]
JAN	0.191597506	0.028739612	0	0	0.162857895	0	0	0	0	0	0.007013333
FEB	1.108290924	0.166243555	0	0	0.942047368	0	0	0	0	0	0.011833333
MAR	0.416297177	0.062444545	0	0	0.353852632	0	0	0	0	0	0.017520000
APR	0.020390091	0.003058512	0	0	0.017331579	0	0	0	0	0	0.002420000
MAY	0.230390073	0.034558494	0	0	0.195831579	0	0	0	0	0	0.189360000
JUNE	0.299331150	0.194899576	0	0	1.104431579	0	0	0	0	0	0.006900000
SUB- TOTAL	2.266296921	0.489944294	0	0	2.776352632	0	0	0	0	0	0.235046666
JULY	0.992681027	0.14890208	0	0	0.843778947	0	0	0	0	0	0.009193333
AUG											
SEPT											
OCT											
NOV											
DEC											
TOTAL	3.258977948	0.638846374	0	0	3.620131579	0	0	0	0	0	0.244239999

		Forec	ast of Total Qu	antities of C&	D materials to l	be Generated f	rom the Contr	acts *				
Total	Total Borken Reused in the Reused in Disposal as Import Fill Metals Paper / Plastics (3) Chemical Other, e.g.											
[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000m <sup>3</sup> ]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	$[in '000m^3]$		
	3.2 33.652											

Notes: (1

- (1) The performance targets are given in PS Clause 25.24.
- (2) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the site.
- (3) Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material.
- \* (4) The summary table shall be submitted to *the Project Manager/Supervisor* monthly together with the Waste Flow Table for review and monitoring in accordance with the PS Clause 25.24

**Appendix O – Environmental Mitigation Implementation Schedule** (EMIS)

**Table 1.1 Implementation Schedule for Air Quality Measures** 

EIA Ref	Environmental Protection Measures / Mitigation	Location / Timing	Implementation	Im		entat ges*	ion	Relevant Legislation and
	Measures	3	Agent	Des	С	0	Dec	Guidelines
S3.2	8 times daily watering of the work site with active dust emitting activities.	Work site / during construction	Contractor		1			EIAO-TM
\$3.2	<ul> <li>Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation. The following mitigation measures, good site practices and a comprehensive dust monitoring and audit programme are recommended to minimize cumulative dust impacts.</li> <li>Stockpiling site(s) should be lined with impermeable sheeting and bunded. Stockpiles should be fully covered by impermeable sheeting to reduce dust emission.</li> <li>Misting for the dusty material should be carried out before being loaded into the vehicle.</li> <li>Any vehicle with an open load carrying area should have properly fitted side and tail boards.</li> <li>Material having the potential to create dust should not be loaded from a level higher than the side and tail boards and should be dampened and covered by a clean tarpaulin.</li> <li>The tarpaulin should be properly secured and should extent at least 300 mm over the edges of the sides and tailboards. The material should also be dampened if necessary, before transportation.</li> <li>The vehicles should be restricted to maximum speed of 10 km per hour and confined haulage and delivery vehicle to designated roadways insider the site. Onsite unpaved roads should be compacted and kept free of lose materials.</li> <li>Vehicle washing facilities should be provided at every vehicle exit point.</li> </ul>	Work site / during construction	Contractor					EIAO-TM & Air Quality Objective

EIA Ref	Environmental Protection Measures / Mitigation	Location / Timing	Implementation Agent	lm	plem Sta	entati ges*	Relevant Legislation and	
	Measures			Des	С	0	Dec	Guidelines
	section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores.  - Every main haul road should be scaled with concrete and kept clear of dusty materials or sprayed with water so as to maintain the entire road surface wet.  - Every stock of more than 20 bags of cement should be covered entirely by impervious sheeting placed in							
	<ul> <li>an area sheltered on the top and the three sides.</li> <li>Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving the construction sites.</li> </ul>							

<sup>\*</sup> Des - Design, C - Construction, O - Operation, and Dec - Decommissioning

**Table 1.2 Implementation Schedule for Noise Measures** 

EIA Ref	Environmental Protection Measures / Mitigation	Location / Timing	Implementation	lm		entat ges*	ion	Relevant Legislation and
	Measures		Agent	Des	С	0	Dec	Guidelines
\$3.3	Use of quiet PME, movable barriers barrier for Asphalt Paver, Breaker, Excavator and Hand-held breaker and full enclosure for Air Compressor, Bar Bender, Concrete Pump, Generator and Water Pump.	Work Sites / Construction Period	Contractor		√			EIAO-TM, NCO
\$3.3	<ul> <li>Good Site Practice: <ul> <li>Only well-maintained plant should be operated onsite and plant should be serviced regularly during the construction program.</li> <li>Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program.</li> <li>Mobile plant, if any, should be sited as far away from NSRs as possible.</li> <li>Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum.</li> <li>Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.</li> <li>Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.</li> </ul> </li> </ul>	Work Sites / Construction Period	Contractor		√			EIAO-TM, NCO
S3.3	- Scheduling of Construction Works during School Examination Period.	Construction site near to school / Examination Period	Contractor		<b>√</b>			

<sup>\*</sup> Des - Design, C - Construction, O - Operation, and Dec - Decommissioning

**Table 1.3 Implementation Schedule for Water Quality Measures** 

EIA Ref	Environmental Protection Measures / Mitigation	Location / Timing	Implementation	lm	plem Sta	entati ges*	ion	Relevant Legislation and
	Measures	g	Agent	Des	С	0	Dec	Guidelines
S3.4	Operational Phase	Project site / during design and	CEDD	1		<b>√</b>		EIAO-TM, WPCO, ProPECC PN 5/93
	A surface water drainage system should be provided to collect road runoff. It is recommended that the road	operational stages						
	drainage should be provided with adequately designed silt							
	trap and oil interceptors, as necessary. The design of the							
	operational stage mitigation measures for the road works							
	shall take into account the guidelines published in ProPECC							
00.4	PN 5/93 "Drainage Plans subject to Comment by the EPD".							
S3.4	Construction Phase	Work Sites / during construction	Contractor		<b>√</b>			EIAO-TM, WPCO, ProPECC PN 1/94
	Construction Runoff							
	Exposed soil areas should be minimised to reduce the potential for increased siltation, contamination of runoff, and erosion. Construction runoff related impacts associated with the above ground construction activities can be readily controlled through the use of appropriate mitigation measures which include:  - use of sediment traps - adequate maintenance of drainage systems to prevent flooding and overflow.							
S3.4	Construction site should be provided with adequately designed perimeter channel and pre-treatment facilities and proper maintenance. The boundaries of critical areas of earthworks should be marked and surrounded by dykes or embankments for flood protection. Temporary ditches should be provided to facilitate runoff discharge into the appropriate watercourses, via a silt retention pond. Permanent drainage channels should incorporate sediment	Work Sites / during construction	Contractor		√			EIAO-TM, WPCO, ProPECC PN 1/94
	basins or traps and baffles to enhance deposition rates. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94.							

EIA Ref	Environmental Protection Measures / Mitigation	Location / Timing	Implementation	lm		entati ges*	ion	Relevant Legislation and
	Measures	Loodilon, mining	Agent	Des	С	0	Dec	Guidelines
S3.4	Ideally, construction works should be programmed to minimise surface excavation works during the rainy season (April to September). All exposed earth areas should be completed as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means.	Work Sites / during construction	Contractor		√			EIAO-TM, WPCO, ProPECC PN 1/94
S3.4	Sediment tanks of sufficient capacity, constructed from pre- formed individual cells of approximately 6 to 8 m³ capacity, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity is flexible and able to handle multiple inputs from a variety of sources and particularly suited to applications where the influent is pumped.	Work Sites / during construction	Contractor		√			EIAO-TM, WPCO, ProPECC PN 1/94
S3.4	Open stockpiles of construction materials (for examples, aggregates, sand and fill material) of more than 50 m <sup>3</sup> should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.	Work Sites / during construction	Contractor		√			EIAO-TM, WPCO, ProPECC PN 1/94
S3.4	Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.	Work Sites / during construction	Contractor		√			EIAO-TM, WPCO, ProPECC PN 1/94
S3.4	Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecast, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events.	Work Sites / during construction	Contractor		√			EIAO-TM, WPCO, ProPECC PN 1/94

EIA Ref	Environmental Protection Measures / Mitigation	Location / Timing	Implementation	lm		entati ges*	ion	Relevant Legislation and
	Measures		Agent	Des	С	0	Dec	Guidelines
S3.4	Oil interceptors should be provided in the drainage system and regularly cleaned to prevent the release of oils and grease into the storm water drainage system after accidental spillages. The interceptor should have a bypass to prevent flushing during periods of heavy rain.	Work Sites / during construction	Contractor		√			EIAO-TM, WPCO, ProPECC PN 1/94
S3.4	Wheel Washing Water All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and located wheel washing bay should be provided at every site exit, and wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.	Work Sites / during construction	Contractor		1			EIAO-TM, WPCO, ProPECC PN 1/94
S3.4	Drainage It is recommended that on-site drainage system should be installed prior to the commencement of other construction activities. Sediment traps should be installed in order to minimise the sediment loading of the effluent prior to discharge into foul sewers. There should be no direct discharge of effluent from the site into the sea.	Work Sites / during construction	Contractor		√ 			EIAO-TM, WPCO, ProPECC PN 1/94
S3.4	All temporary and permanent drainage pipes and culverts provided to facilitate runoff discharge should be adequately designed for the controlled release of storm flows. All sediment control measures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rain storms. The temporarily diverted drainage should be reinstated to its original condition when the construction work has finished or the temporary diversion is no longer required.	Work Sites / during construction	Contractor		1			EIAO-TM, WPCO, ProPECC PN 1/94

EIA Ref	Environmental Protection Measures / Mitigation	Location / Timing	Implementation	lm		entati ges*	ion	Relevant Legislation and
	Measures	Location, mining	Agent	Des	С	0	Dec	Guidelines
S3.4	All fuel tanks and storage areas should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent spilled fuel oils from reaching the coastal waters of the Victoria Harbour WCZ.	Work Sites / during construction	Contractor		√			EIAO-TM, WPCO, ProPECC PN 1/94, WDO
S3.4	Sewage Effluent Construction work force sewage discharges on site are expected to be connected to the existing trunk sewer or sewage treatment facilities. The construction sewage may need to be handled by portable chemical toilets prior to the commission of the on-site sewer system. Appropriate numbers of portable toilets should be provided by a licensed contractor to serve the large number of construction workers over the construction site. The Contractor should also be responsible for waste disposal and maintenance practices.		Contractor		1			EIAO-TM, WPCO
S3.4	Stormwater Discharges Minimum distances of 100 m should be maintained between the existing or planned stormwater discharges and the existing or planned seawater intakes.	Work Sites / during construction	Contractor		1			EIAO-TM, WPCO, TM-DSS
S3.4	Debris and Litter In order to maintain water quality in acceptable conditions with regard to aesthetic quality, contractors should be required, under conditions of contract, to ensure that site management is optimised and that disposal of any solid materials, litter or wastes to marine waters does not occur.	Work Sites / during construction	Contractor		√			EIAO-TM, WPCO, WDO

<sup>\*</sup> Des - Design, C - Construction, O - Operation, and Dec - Decommissioning

**Table 1.4 Implementation Schedule for Waste Management Measures** 

EIA Ref	Environmental Protection Measures / Mitigation	Location / Timing	Implementation	lm		entati ges*	ion	Relevant Legislation and
	Measures		Agent	Des	С	0	Dec	Guidelines
\$3.5	Good Site Practices It is not anticipated that adverse waste management related impacts would arise, provided that good site practices are adhered to. Recommendations for good site practices during construction activities include:  - Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.  - Training of site personnel in proper waste management and chemical waste handling procedures  - Provision of sufficient waste disposal points and regular collection for disposal  - Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.  - A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites)	Work Sites / during construction	Contractor					EIAO-TM, WDO
\$3.5	Waste Reduction Measures Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:  - Sort C&D waste from demolition of the remaining structures to recover recyclable portions such as metals.  - Segregation and storage of different types of waste in	Work Sites / during construction	Contractor					EIAO-TM, WDO

EIA Ref	Environmental Protection Measures / Mitigation	Location / Timing	Implementation	lm		entati ges*	on	Relevant Legislation and
	Measures		Agent	Des	С	0	Dec	Guidelines
	different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.  - Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force.  - Any unused chemicals or those with remaining functional capacity should be recycled.  - Proper storage and site practices to minimise the potential for damage or contamination of construction materials.							
S3.5	Construction and Demolition Materials  Mitigation measures and good site practices should be incorporated in the contract document to control potential environmental impact from handling and transportation of C&D material. The mitigation measures include:  - Where it is unavoidable to have transient stockpiles of C&D material within the Project work site pending collection for disposal, the transient stockpiles shall be located away from waterfront or storm drains as far as possible.  - Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric.  - Skip hoist for material transport should be totally enclosed by impervious sheeting.  - Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site.  - The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete,	Work sites / during construction	Contractor and Independent Environmental Checker					ETWB TCW No. 33/2002, 31/2004, 19/2005

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and
1				Des	С	0	Dec	Guidelines
	bituminous materials or hardcores.							
	- The load of dusty materials carried by vehicle leaving							
	a construction site should be covered entirely by							
	clean impervious sheeting to ensure dust materials							
	do not leak from the vehicle.							
	- All dusty materials should be sprayed with water prior							
	to any loading, unloading or transfer operation so as to maintain the dusty materials wet.							
	- The height from which excavated materials are							
	dropped should be controlled to a minimum practical							
	height to limit fugitive dust generation from unloading.							
	- When delivering inert C&D material to public fill							
	reception facilities, the material should consist							
	entirely of inert construction waste and of size less							
	than 250mm or other sizes as agreed with the							
	Secretary of the Public Fill Committee. In order to							
	monitor the disposal of the surplus C&D material at							
	the designed public fill reception facility and to control							
	fly tipping, a trip-ticket system as stipulated in the							
	ETWB TCW No. 31/2004 "Trip Ticket System for							
	Disposal of Construction and Demolition Materials"							
	should be included as one of the contractual							
	requirements and implemented by an Environmental							
	Team undertaking the Environmental Monitoring and							
	Audit work. An Independent Environmental Checker							
	should be responsible for auditing the results of the system.							
S3.5	Chemical Waste	Work Sites / during	Contractor					Waste Disposal
		construction						(Chemical Waste)
	After use, chemical wastes (for example, cleaning fluids,							(General)
	solvents, lubrication oil and fuel) should be handled							Regulation
	according to the Code of Practice on the Packaging,							Code of Dreatice
	Labelling and Storage of Chemical Wastes. Spent chemicals							Code of Practice on the Packaging,
	should be collected by a licensed collector for disposal at the							Labelling and

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and
				Des	С	0	Dec	Guidelines
	CWTF or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.							Storage of Chemical Wastes
S3.5	General Refuse	Work Sites / during construction	Contractor					Waste Disposal Ordinance
	General refuse should be stored in enclosed bins or compaction units separate from C&D material. A licensed waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Effective collection and storage methods (including enclosed and covered area) of site wastes would be required to prevent waste materials from being blown around by wind, wastewater discharge by flushing or leaching into the marine environment, or creating odour nuisance or pest and vermin problem.							Water Pollution Control Ordinance

<sup>\*</sup> Des - Design, C - Construction, O – Operation, and Dec - Decommissioning

Table 1.5 Implementation Schedule for Landscape and Visual Impacts

EIA Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Implementation Agent	Implementation Stages*				Relevant Legislation and
				Des	С	0	Dec	Guidelines
S3.8.12	Construction Phase  All existing trees should be carefully protected during construction.  Trees unavoidably affected by the works should be transplanted where practical. Detailed transplanting proposal will be submitted to relevant government departments for approval in accordance with ETWBC 2/2004 and 3/2006. Final locations of transplanted trees should be agreed prior to commencement of the work.  Control of night-time lighting.  Erection of decorative screen hoarding.	Works area / During Construction Phase	Contractor	√ 	1			EIAO-TM
S3.8.13	Operation Phase  Compensatory tree planting should be incorporated into the proposed projects where trees are affected.  Tall buffer screen tree / shrub / climber planting should be incorporated to soften hard engineering structures and facilities.  Sensitive streetscape design should be incorporated along all new roads to reflect the new urban development in Kai Tak.  Structure, ornamental tree / shrub / climber planting should be provided along roadside amenity strips and central dividers to enhance the townscape quality, where space is available.  Aesthetically pleasing design as regard to the form, material and finishes should be incorporated to all buildings, engineering structures and associated	Project area / During Design stage and Operation Phase	CEDD	✓ ————————————————————————————————————		√		EIAO-TM

<sup>\*</sup> Des - Design, C - Construction, O - Operation, and Dec - Decommissioning

Appendix P – Summaries of Environmental Complaint, Warning, Summon and Notification of Successful Prosecution

**Reporting Month: July 2021** 

Contract No.	Record of Complaint (Yes/No)	Record of Warning (Yes/No)	Notification of Summons and Successful Prosecutions (Yes/No)
ED/2018/05	Yes	No	No

Cumulative Statistics on Complaints, Notification of Summons and Successful Prosecutions

upto reporting month

Contract No.	Record of Complaint	Record of Warning	Notification of Summons and Successful Prosecutions
ED/2018/05	1	0	0

Complaint Log	g for ED/2018/05			
Complaint Ref. No.	Date of Complaint	Description of Complaint	Investigation / Recommendations / Actions	Close-Out Date / Status
C0002	8 & 12 July 2021	Contractor received complaint via email from EPD (Case no. K19/RE/00016046-21 and K19/RE/00016240-21) on 15 July 2021.  Details of Complaint: 1. Complaint of dust from the construction site of stage 5B Infrastructure Works near Sung Wong Toi MTR Station affecting nearby pedestrians and residents.  2. Please ensure the work fulfill the relevant environmental legislations and their subsidiary regulations.  3. Please take necessary measures to minimize the environmental nuisance arising from the construction site.	Results / Findings: There was no specific time for the captioned complaint occurred. Based on the information provided by the Contractor on 29 April 2021, they have implemented the following regular mitigation measures for dust control: wheel washing facilities/arrangement, road hump to cut-off water spilling off from site, water spraying to soil stockpile / haul road surface by water truck / manpower, compact and cover to soil stockpile, routine cleansing of haul road and gate access.  Joint site inspection was conducted by AECOM, Build king, ET & IEC on 29th July 2021, no adverse observation against the dust impact was recorded.  Recommendations:  1. Covering excavated material fully with green net at all-time except during working process;  2. Covering excavated slope with green net/pouring concrete; and  3. Routine water spraying by water jet and water truck for the main haul road and the area that water sprinkler system was not covered.  Action taken  1. As per the Contractor, water mist cannon was applied to Road L16 to enhance the control of dust emission	30 July 2021