



**CONTRACT NO. HY/2020/08**

**FLYOVER FROM KWAI TSING INTERCHANGE  
UPRAMP TO KWAI CHUNG ROAD**

**BASELINE MONITORING REPORT (REVISION A)**

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**DATE:**

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Date: 26<sup>th</sup> January 2022

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Dear Sirs,

**Contract No. HY/2020/08**  
**Flyover From Kwai Tsing Interchange Upramp to Kwai Chung Road**  
**Independent Environmental Checker**

**Baseline Monitoring Report (Revision A)**

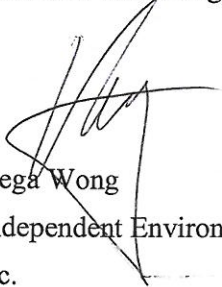
We refer to the Contract No. HY/2020/08 Flyover From Kwai Tsing Interchange Upramp to Kwai Chung Road under Environmental Permit No. EP-541/2017/A Baseline Monitoring Report (Revision A) certified by the Environmental Team in January 2022 in response to EPD comments on 31<sup>th</sup> December 2021. We hereby verified the Baseline Monitoring Report in accordance with the Condition 3.2(i) of EP-541/2017/A.

Should you have any query, please feel free to contact the undersigned at 2877 3122 ([vegawong@nt.com.hk](mailto:vegawong@nt.com.hk)).

Yours Sincerely,

For and on behalf of

Nature & Technologies (HK) Limited



Vega Wong

Independent Environmental Checker

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**Executive Summary**

- i. This Baseline Monitoring Report is to report baseline findings for the Project of Flyover from Kwai Tsing Interchange Upramp to Kwai Chung Road.
- ii. Baseline air quality and noise monitoring were conducted at three (3) designated air quality monitoring stations and three (3) designated noise monitoring stations for consecutive 14 days prior to the commencement of construction works.
- iii. This report presents the findings and information of baseline air quality and noise monitoring during the period from 12 August 2021 to 25 August 2021. No construction activities under the Project were undertaken during the baseline monitoring period.

**Air Quality Monitoring**

- iv. Air quality monitoring was conducted and recorded in terms of 1-hour and 24-hour Total Suspended Particulates (TSP) for 14 consecutive days. The Action Levels for 1-hr TSP are established at (3) air quality monitoring stations based on the measured baseline TSP levels. Action & Limit levels of 1-hour and 24-hour TSP levels are summarized as shown in **Table I**.

**Table I Summary of Action & Limit Levels of Baseline 1-hour and 24-hour TSP Levels**

Monitoring Station	1-hour TSP Level		24-hour TSP Level	
	Action Level (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )	Action Level (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )
AMC01- Lai King Catholic Secondary School	256.2	500.0	144.8	260.0
AMC02-Fung King House	256.7	500.0	144.3	260.0
AMC03A-Ming King House	259.3	500.0	143.7	260.0

**Noise Monitoring**

- v. The baseline noise levels were established at three (3) monitoring stations during a period of two weeks measurement. Action and Limit levels for construction noise shall adhere to the levels as defined in the EM&A Manual.

## 1 Introduction

### 1.1 Background

- 1.1.1. In order to cater the future traffic growth and prevent traffic congestion in the future during peak traffic flow hour at Tsuen Wan Road (TWR) near Kwai Tsing Interchange (KT I/C), an additional southbound lane (a separate viaduct) is introduced on TWR and connected to the existing lane on the west side of KCR.
- 1.1.2. The Project mainly comprises the following works:
- (i) Construction of a single-lane vehicular bridge of approximately 370 metres in length connecting Tsuen Wan Road southbound fast lane (near the Kwai Tsing Interchange upramp) to Kwai Chng Road;
  - (ii) Widening of a section of Tsuen Wan Road southbound traffic lane of approximately 85 metres in length between Kwai Tsing Interchange upramp and Kwai Chung Road;
  - (iii) Construction of noise barriers at the proposed vehicular bridge;
  - (iv) Demolition and reprovisioning of the existing Footbridge No. NF303 and associated footpath reconstruction;
  - (v) Reconstruction of the bus stop next to Footbridge No. NF303 and associated footpath reconstruction;
  - (vi) Reconstruction of a section of road at Kwai Chung Road and Container Port Road South; and
  - (vii) Implementation of ancillary works including public lighting, drainage, landscaping, etc.
- 1.1.3. Based on the current design, the remaining capacity available on the two segregated KCR carriageways will be utilised for this proposed flyover. Location and layout of the proposed road works is shown in **Figure 1.1**.

### 1.2 Purpose of Baseline Monitoring Report

- 1.2.1. Baseline monitoring is to review baseline conditions of air quality and noise level along the Project boundary, and to establish baseline levels for air quality and noise in accordance with the EM&A Manual. These levels would be used as the basis for assessing environmental impact and compliance during construction stage of the Project.
- 1.2.2. This baseline monitoring report presents baseline monitoring requirements, methodologies, monitoring results and determination of action and limit levels for each monitoring parameter at three (3) designated air quality monitoring stations and three (3) designated noise monitoring stations as described in the EM&A Manual.

## 2 Air Quality Monitoring

### 2.1 Monitoring Requirements

- 2.1.1 In accordance with the Project EM&A Manual, baseline 1-hour and 24-hour TSP levels at three (3) air quality monitoring stations should be established by conducting baseline 1-hour and 24-hour TSP monitoring for at least consecutive 14 days prior to the commencement of the construction work. At least 3 sets of 1-hour TSP data shall be collected every day.
- 2.1.2 The baseline air quality monitoring at three (3) monitoring stations were conducted during the baseline monitoring period from 12 August 2021 to 25 August 2021 and the relevant findings are summarized in this report. The baseline monitoring schedule is shown in **Appendix A**.

### 2.2 Monitoring Equipment

- 2.2.1 High Volume Sampler (HVS – Model TE-5170) completed with the appropriate sampling inlets were installed for the 24-hour TSP sampling. 1-hour TSP air quality monitoring was performed by using portable direct reading dust meters at each designated monitoring station, which was verified by IEC and approved by the Engineer’s Representative (ER) on 16 July 2021 and 22 July 2021, respectively according to Section 2.2.2 and 2.3.6 of the Project EM&A Manual. Relevant supporting documents regarding the proposal of alternative sampling method of using direct reading methods are presented in **Appendix B**. The brand and model of the equipment are given in **Table 2.1**.

**Table 2.1 Air Quality Monitoring Equipment**

Equipment	Brand and model	Series Number	Calibration Date	Calibration Due
Portable direct reading dust meter	Met One AEROCET 831	W15448	03-Nov-2020	03-Nov-2021
		W15449	18-Jun-2021	18-Jun-2022
		W16848	29-Dec-2020	29-Dec-2021
High Volume Sampler	TE-5170	HVS004	12-Aug-2021	12-Oct-2021
		HVS014	12-Aug-2021	12-Oct-2021
		HVS015	12-Aug-2021	12-Oct-2021
Wind Anemometer	YiGu	YGY-FSXY1	09-Aug-2021	07-Feb-2022

- 2.2.2 Calibration certificates of high-volume sampler, comparison check with High Volume Sampler of the air quality monitoring equipment and wind anemometer are listed in **Table 2.1** can refer to **Appendix C**.

### 2.3 Monitoring Locations

- 2.3.1 Visit with premise owners to agree the actual measurement locations was conducted. Details of air quality monitoring stations are presented in **Table 2.2** and shown in **Figures 2.1**.

**Table 2.2 Baseline Air Quality Monitoring Stations Location**

Monitoring Station	Air Sensitive Receivers	Monitoring Location
AMC01	Lai King Catholic Secondary School	Roof Floor
AMC02	Fung King House	Roof Floor
AMC03A <sup>1</sup>	Ming King House	Roof Floor

Remark 1: Due to limited location access, lack of power supply and land availability problem for setting up air quality monitoring stations at HKEAA-Lai King Assessment Centre (AMC03) under EM&A manual, alternative monitoring location at Ming King House was proposed in accordance with Section 2.5.3 of the EM&A manual and proposal for alternative monitoring location was submitted to EPD for approval.

## 2.4 Monitoring Parameters, Frequency and Duration

2.4.1 The monitoring parameters, frequency and duration of air quality monitoring are summarized in **Table 2.3**.

**Table 2.3 Air Quality Monitoring Parameters, Frequency and Duration**

Monitoring Period	Duration	Sampling Parameter	Frequency
Baseline Monitoring	At least 14 consecutive days prior to the commissioning of the construction works	1-hour TSP	3 times per day
		24-hour TSP	Daily

## 2.5 Monitoring Methodology

2.5.1 24-hour TSP Measuring Installation (HVS)

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

2.5.2 24-hour Measuring Procedures

- (a) The power supply was checked to ensure the HVS works properly.
- (b) The filter holder and the area surrounding the filter were cleaned.
- (c) The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
- (d) The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
- (e) The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges.
- (f) Then the shelter lid was closed and was secured with the aluminum strip.



- (g) The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
- (h) A new flowrate record sheet was set into the flow recorder.
- (i) The flow rate of the HVS was checked and adjusted at around 1.2 m<sup>3</sup> /min. The range specified in the EM&A Manual was between 0.6-1.7 m<sup>3</sup> /min.
- (j) The programmable timer was set for a sampling period of 24 hrs + 1 hr, and the starting time, weather condition and the filter number were recorded.
- (k) The initial elapsed time was recorded.
- (l) At the end of sampling, the sampled filter was removed carefully and folded in half-length so that only surfaces with collected particulate matter were in contact.
- (m) It was then placed in a clean plastic envelope and sealed.
- (n) All monitoring information was recorded on a standard data sheet.
- (o) Filters were sent to laboratory for further testing.

### 2.5.3 1-hour Measuring Procedures

- (a) Check the calibration period of portable direct reading dust meter prior to monitoring (The direct reading dust meter was calibrated at 2-years interval and checked with High Volume Sampler (HVS) yearly, details refer to Section 2.5.4)
- (b) Record the site condition near / around the monitoring stations.
- (c) Install the portable direct reading dust meter to the monitoring location.
- (d) Slide the power switch to turn the power on.
- (e) Check of portable direct reading dust meter to ensure the equipment operation in normal condition.
- (f) Select the period of measurement to 60mins.
- (g) Check and set the correct time.
- (h) Select the appropriate unit display for the equipment.
- (i) Slide the power switch to turn the power off when the monitoring period ended (3 times 1 hour TSP monitoring per day).
- (j) Uninstall the portable direct reading dust meter
- (k) Collected the sampled data for analysis.

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

### 2.5.4 Maintenance and Calibration

- (a) The direct reading dust meter was calibrated at 2-years interval and checked with High Volume Sampler (HVS) yearly to determine the accuracy and validity of the results measured.
- (b) Checking of direct reading dust meter will be carried out in order to determine the conversion factor between the direct reading dust meter and the standard equipment, HVS. The comparison check is to be considered valid based on correlation coefficient checked by HOKLAS laboratory

### 2.5.5 Wind data

Wind data monitoring equipment was set up at roof floor (about 15/F) of Fung King House for logging wind speed and wind direction such that the wind sensors were clear of obstructions or turbulence caused by building. The wind data monitoring equipment was re-calibrated at least once every six months and the wind directions were divided into 16 sections of 22.5

degrees each. The wind data obtained from the on-site wind station during the baseline monitoring period is provided in **Appendix D**.

**2.6 Results and Observations**

- 2.6.1 Baseline 1-hour and 24-hour TSP monitoring were carried out from 12 August 2021 to 25 August 2021 for consecutive 14 days and the weather were mostly fine with a few days of occasionally shower. Major dust source was from road traffic.
- 2.6.2 The results for 1-hour and 24-hour TSP are summarized in **Table 2.4** respectively. Detailed air quality monitoring results are presented in **Appendix E**.

**Table 2.4 Summary of 1-hour and 24-hour TSP Baseline Monitoring Results**

Parameter	Monitoring Station	Average (µg/m³)	Range (µg/m³)
1-hour TSP Level	AMC01	9.5	4.4 – 19.8
	AMC02	10.3	3.5 – 23.0
	AMC03A	14.3	8.0 – 30.6
24-hour TSP Level	AMC01	22.8	13.9 – 31.1
	AMC02	22.0	14.6 – 40.0
	AMC03A	21.1	3.4 – 31.6

**2.7 Action and Limit Levels**

- 2.7.1 Action and Limit Levels for air quality impact monitoring were based on the criteria adopted from the EM&A Manual as presented in **Table 2.5**.

**Table 2.5 Derivation of Action and Limit Levels for Air Quality**

Parameters	Action Level	Limit Level
24-hour TSP Level in µg/m³	For baseline level ≤ 200 µg/m³, Action level = (baseline level * 1.3 + Limit level)/2; For baseline level > 200µg/m³, Action level = Limit level	260 µg/m³
1-hour TSP Level in µg/m³	For baseline level ≤ 384 µg/m³, Action level = (baseline level * 1.3 + Limit level)/2; For baseline level > 384µg/m³, Action level = Limit level	500 µg/m³

- 2.7.2 The derived Action and Limit levels are presented in **Table 2.6**.

**Table 2.6 Derived Action and Limit Levels for Air Quality**

Parameter	Monitoring Station	Action Level (µg/m³)	Limit Level (µg/m³)
1-hour TSP Level	AMC01	256.2	500.0
	AMC02	256.7	500.0
	AMC03A	259.3	500.0
24-hour TSP Level	AMC01	144.8	260.0

Parameter	Monitoring Station	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
	AMC02	144.3	260.0
	AMC03A	143.7	260.0

- 2.7.3 As the baseline air quality monitoring results only represent wet season condition, it is recommended the derived Action and Limit Levels shall be reviewed once every three months in accordance with Section 2.6.6 of the EM&A Manual to account for any significant change in the ambient conditions, including seasonal fluctuation through monthly EM&A report recommendations for any improvement in EM&A programme as per Section 10.3.4 of EM&A Manual.

### 3 NOISE MONITORING

#### 3.1 Monitoring Requirements

- 3.1.1 In accordance with the EM&A Manual, baseline noise monitoring at three (3) monitoring stations shall be carried out daily for a period of at least two weeks.
- 3.1.2 The baseline noise monitoring at three (3) monitoring stations were conducted during the monitoring period from 12 August 2021 to 25 August 2021 and the relevant findings are summarized in this report. The baseline monitoring schedule is shown in **Appendix A**.

#### 3.2 Monitoring Equipment

- 3.2.1 Noise monitoring was performed using sound level meter at the designated monitoring location. Sound level meters shall comply with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator shall be deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in **Table 3.1**.

**Table 3.1 Noise Monitoring Equipment**

Equipment	Brand and Model	Series Number	Calibration Date	Calibration Due
Integrated Sound Level Meter	Larson Davis LxT1	0004796	27-May-2021	27-May-2022
		0004797	27-May-2021	27-May-2022
	Larson Davis LxT SE	0006346	8-Feb-2021	8-Feb-2022
Acoustic Calibrator	Larson Davis Cal 200	13098	20-Nov-2020	20-Nov-2021

- 3.2.2 Calibration certificates of the noise monitoring equipment are attached in **Appendix C**.

#### 3.3 Monitoring Locations

- 3.3.1 Visit with premise owners to agree the actual measurement locations was conducted. Details of noise monitoring stations are presented in **Table 3.2** and shown in **Figures 3.1**.

**Table 3.2 Baseline Noise Monitoring Stations**

Monitoring Station ID	Noise Sensitive Receivers	Measurement Type	Monitoring Location
NMC01	Lai King Catholic Secondary School	Free-Field	Roof Floor
NMC02	Fung King House	Free-Field	Roof Floor
NMC03	HKEAA-Lai King Assessment Centre	Free-Field	Ground Floor

### 3.4 Monitoring Parameters, Frequency and Duration

3.4.1 Monitoring parameters, frequency and duration of noise monitoring are summarized in Table 3.3.

**Table 3.3 Baseline Noise Monitoring Parameters, Frequency and Duration**

Monitoring Period	Duration	Measurement Parameter	Measurement Period	Frequency
Baseline Monitoring	Consecutive days of at least 2 weeks before commencement of major construction works	A-weighted levels $L_{eq}$ , $L_{10}$ and $L_{90}$ Including 30 minutes (six consecutive $L_{eq}(5min)$ readings)	(i) Between 0700 and 1900 hours; (ii) Between 1900 and 2300 hours; and (iii) Between 2300 to 0700 hours of next day	Daily

### 3.5 Monitoring Methodology

#### 3.5.1 Monitoring Procedure

- (a) The monitoring station shall normally be at a point 1m from the exterior of the sensitive receiver's building façade and be at a position 1.2m above the ground.
- (b) Façade measurements were made at the monitoring locations. For free-field measurement, a correction factor of +3 dB (A) would be applied.
- (c) The battery condition was checked to ensure the correct functioning of the meter.
- (d) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - (i) Frequency weighting: A time weighting: Fast
  - (ii) Time measurement: Daily measurement of A-weighted levels  $L_{eq}$ ,  $L_{10}$  and  $L_{90}$  shall be conducted for at least two weeks. Daily measurement periods should include: (i) between 0700 and 1900 hours; (ii) between 1900 and 2300 hours; and (iii) between 2300 to 0700 hours of next day. Each of the daily sampling periods shall include 30 minutes (six consecutive  $L_{eq}(5min)$  readings).
- (e) Prior and after to the noise measurement, the meter was checked using the acoustic calibrator for 94dB (A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than  $\pm 1$  dB (A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.

#### 3.5.2 Maintenance and Calibration

- (a) The microphone head of the sound level meter was cleaned with soft cloth at regular intervals.
- (b) The sound level meter and calibrator were calibrated at yearly intervals.

### 3.6 Results and Observations

- 3.6.1 Baseline noise monitoring was carried out from 12 August 2021 to 25 August 2021 for recording two weeks monitoring data and the weather were mostly fine with a few days of occasionally shower. During the baseline monitoring period, no construction activities were observed. The major noise source was traffic noise from Tsuen Wan Road, Kwai Chung Road as well as Tsing Kwai Highway near the monitoring stations and contributed to the high average noise level especially for NMC03 where train noise is also identify as a influencing factor that may affect the result of baseline monitoring as it is located near Lai King MTR Station.
- 3.6.2 The baseline noise monitoring results are summarized in Table 3.4 respectively. Detailed noise monitoring results are presented in Appendix F.

**Table 3.4 Summary of Baseline Noise Monitoring Results**

Monitoring Station	0700-1900 hrs on normal weekdays		0700-2300 hrs on holidays (including Sundays); and 1900-2300 hrs on all days		2300-0700 hrs of all days	
	Leq (30min), dB(A)					
	Average	Range	Average	Range	Average	Range
NMC01	74.5	73.9 – 74.9	73.2	70.2 – 74.6	71.9	69.4 – 74.0
NMC02	67.6	66.7 – 72.0	65.5	64.1 – 71.3	64.6	62.8 – 71.5
NMC03	79.1	77.0 – 80.3	77.5	75.4 – 79.3	75.1	71.8 – 77.4

Remark: Each of daily 30-minute sampling period includes six consecutive Leq (5min) readings.

### 3.7 Action and Limit Levels

- 3.7.1 Action and Limit Levels of noise monitoring have been set in accordance with the criteria specified in the EM&A Manual as shown in Table 3.5 below.

**Table 3.5 Action and Limit Levels for Construction Noise**

Monitoring Station	Action Level	Limit Level (dB(A))		
		0700-1900 hrs on normal weekdays	0700-2300 hrs on holidays (including Sundays); and 1900-2300 hrs on all days <sup>2</sup>	2300-0700 hrs of all days
NMC01	When one documented complaint is received	65 / 70 <sup>1</sup>	60 / 65 / 70 <sup>3</sup>	45 / 50 / 55 <sup>3</sup>
NMC02		75		45 / 50 / 55 <sup>3</sup>
NMC03		65 / 70 <sup>1</sup>		45 / 50 / 55 <sup>3</sup>

Remark 1: Limit level of NMC01 and NMC03 reduce to 65 dB (A) during examination periods if any.

Remark 2: Construction noise during restricted hours is under the control of Noise Control Ordinance Limit Level to be selected based on Area Sensitivity Rating.

Remark 3: Limit Level for restricted hour monitoring shall act as reference level only. Investigation would be conducted on CNP compliance if exceedance recorded during restricted hour noise monitoring period.

- 3.7.2 As the baseline noise monitoring results were substantially higher than Action and Limit Levels as defined in EM&A manual due to the dominant prevailing road and railway noise, it is recommended to review of the effectiveness of adopting the conventional Limit Levels



as defined in EM&A manual shall be reviewed through monthly report recommendations for any improvement in EM&A programme as per Section 10.3.4 of EM&A Manual.

#### **4 Revision for inclusion into EM&A Manual**

- 4.1.1 Due to limited location access, lack of power supply and land availability problem for setting up air quality monitoring stations at AMC03, alternative monitoring location (AMC03A) was proposed in accordance with Section 2.5.3 of the EM&A manual. The proposal of alternative monitoring station was submitted in a separate proposal for EPD's approval.
- 4.1.2 The baseline environmental monitoring was conducted according to the EM&A Manual for air quality and noise. The monitoring methodology and parameters monitored are all in line with the EM&A Manual.



## 5 Comments, Recommendations and Conclusions

### Comments and Recommendations

#### Air Quality

- 5.1.1 Baseline air quality monitoring was conducted during typical Hong Kong wet season. The baseline data collected therefore represent baseline air quality of the wet season immediately prior to commencement of the Project. It is therefore recommended that the baseline conditions should be reviewed every three months at each monitoring location when no dusty works activities are in operation, as such the influence of seasonal changes can be taken into account for the interpretation of the air quality monitoring data.

#### Other noise sources

- 5.1.2 Baseline noise monitoring was conducted prior to commencement of construction works. During baseline monitoring period, no construction activities were observed. The major noise source was traffic noise from Tsuen Wan Road, Kwai Chung Road as well as Tsing Kwai Highway and train noise generated from Lai King Station near the monitoring stations. As the baseline noise monitoring results were substantially higher than Action and Limit Levels as defined in EM&A manual due to the dominant prevailing road and railway noise, it is recommended to review of the effectiveness of adopting the conventional Limit Levels as defined in EM&A manual shall be reviewed through monthly report recommendations for any improvement in EM&A programme as per Section 10.3.4 of EM&A Manual.

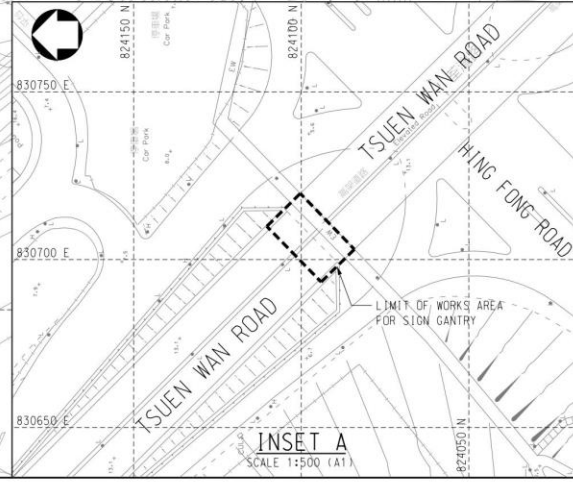
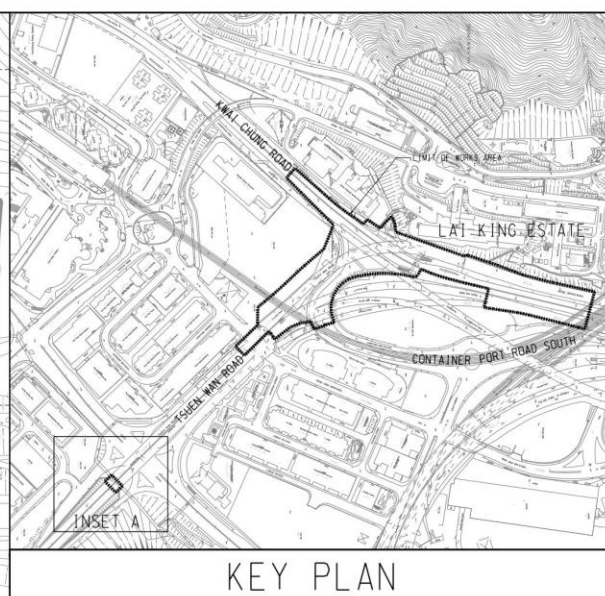
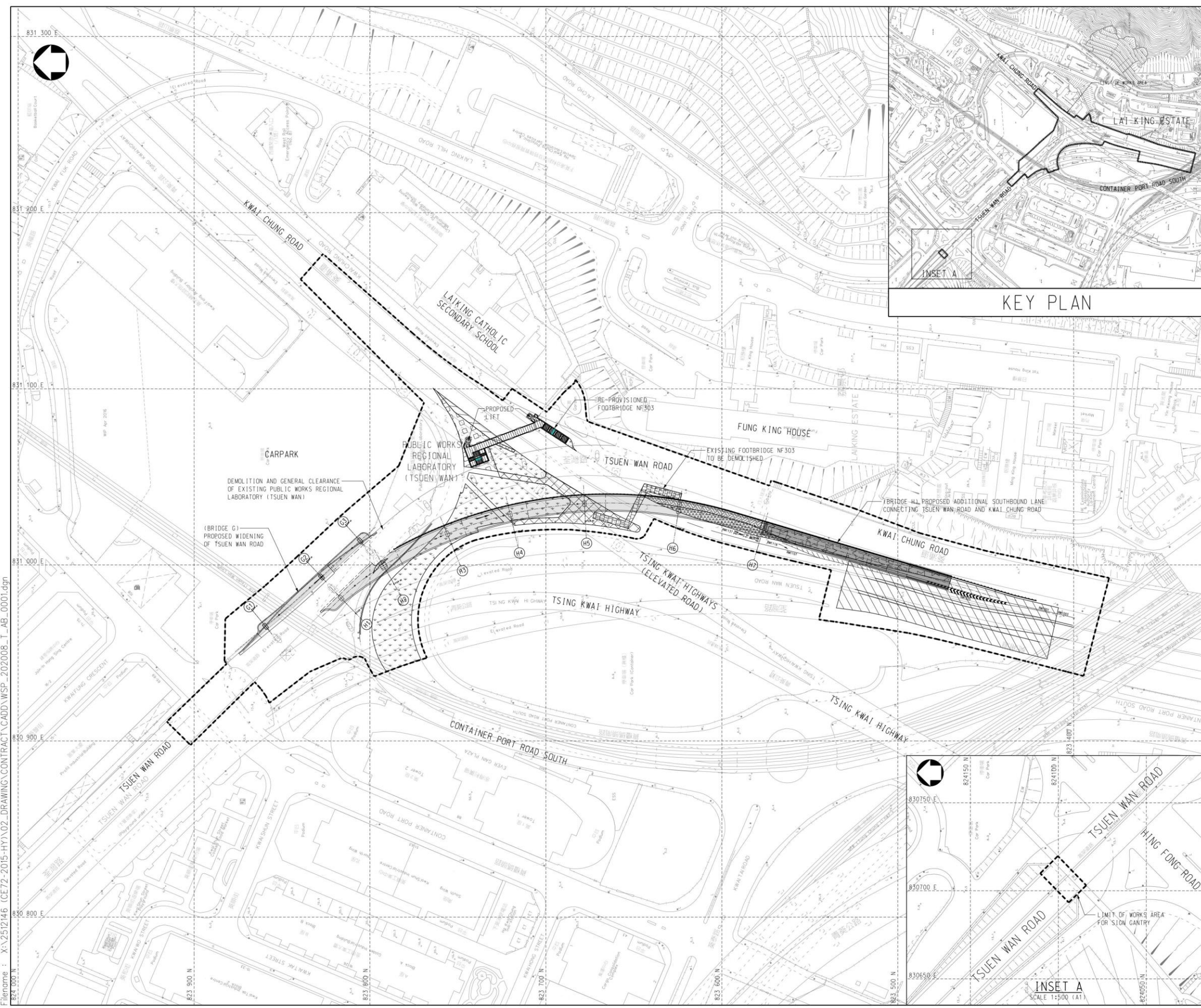
### Conclusion

- 5.1.3 In accordance with the Project EM&A Manual and EP, baseline monitoring has been undertaken prior to commencement of the construction works of the Contract for the following baseline monitoring components: Air Quality and Noise.
- 5.1.4 As highlighted Section 2.3.1, one alternative air monitoring location was proposed for baseline monitoring. Nevertheless, given the alternative monitoring location with similar pollution sources and similar meteorological condition to the original location recommended in the EM&A manual, it is considered to be representative for the air sensitive receiver identified in EIA manual.
- 5.1.5 Baseline air quality monitoring was conducted at three (3) monitoring locations from 12 August 2021 to 25 August 2021. Overall, the baseline air quality monitoring results are considered representative to the ambient air quality conditions of the respective sensitive receivers. Action and Limit Levels for air quality of 1-hour and 24-hour TSP levels were established based on the baseline monitoring results.
- 5.1.6 Baseline noise monitoring was conducted at three (3) monitoring locations from 12 August 2021 to 25 August 2021. The major noise sources identified at the monitoring station are traffic noise and community noise. The baseline monitoring results are considered representative of the ambient noise level.



**Figure 1.1**  
**Location of Project Site**

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 Filename : X:\252146\_CE72-2015-HY\02\_DRAWING\CONTRACT\CADD\WSP\_202008\_T\_AB\_0001.dgn



- NOTES :
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
  2. ALL LEVELS ARE APPROXIMATE VALUES AND IN METRES ABOVE HONG KONG PRINCIPAL DATUM.
  3. SECTIONS OF THE EXISTING CARRIAGEWAYS AND FOOTPATHS WITHIN THE LIMIT OF WORKS AREA MAY BE TEMPORARILY CLOSED IN PHASES AS AND WHEN REQUIRED.

LEGEND :

----- LIMIT OF WORK SITE

Issue for Tender	EW	01/21
Rev Description	By	Date
Consultant		
<b>wsp</b>		
Project title		
CONTRACT NO. HY/2020/08		
FLYOVER FROM KWAI TSING INTERCHANGE UPRAMP TO KWAI CHUNG ROAD		
Drawing title		
<b>Figure 1.1</b>		
<b>Location of Project Site</b>		
Drawing no.	Rev.	
HY202008/AB/0001	—	
Drawn	Date	Checked
CSL	29/11/2019	SH
Scale	1:1000 (A1)	Status
		CONTRACT

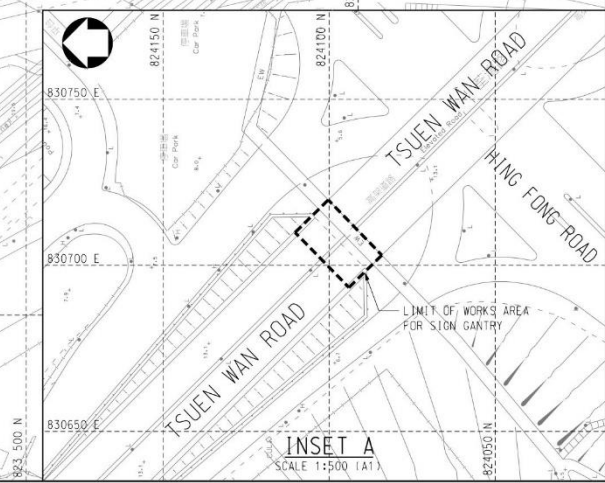
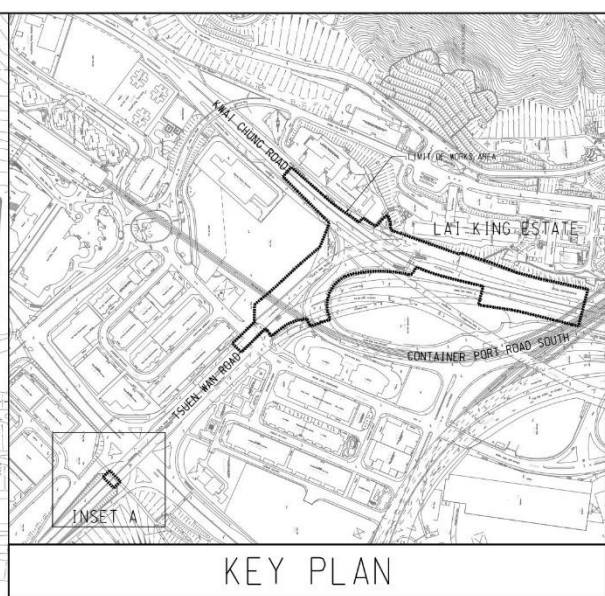
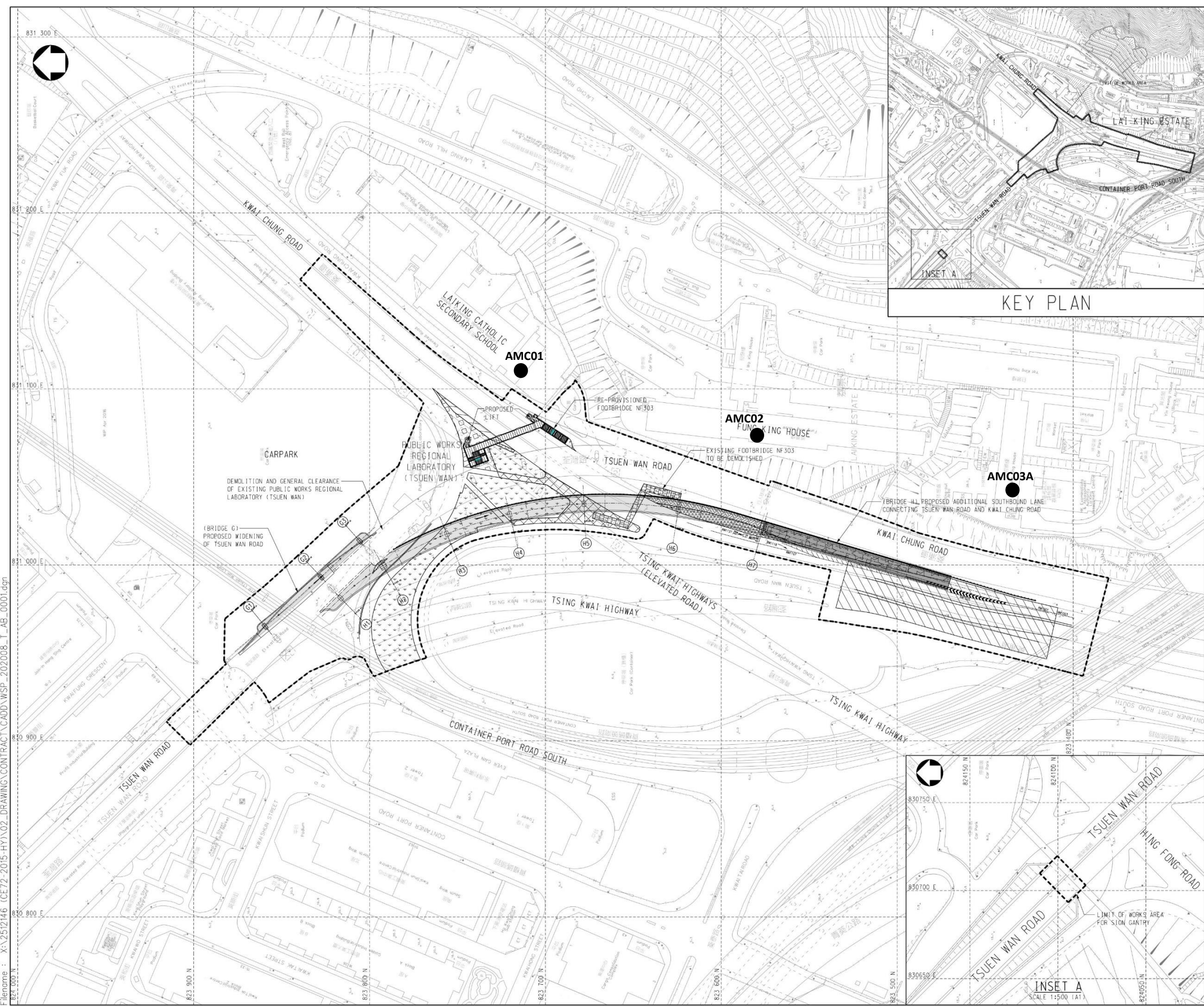
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 工程處  
 WORKS DIVISION



**Figure 2.1**  
**Location of Air Quality Monitoring Stations**

Date : 4/5/2021  
 Filename : X:\252146 (CE72-2015-HY)\02\_DRAWING\CONTRACT\CADD\WSP\_202008\_T\_AB\_0001.dgn



- NOTES :
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
  2. ALL LEVELS ARE APPROXIMATE VALUES AND IN METRES ABOVE HONG KONG PRINCIPAL DATUM.
  3. SECTIONS OF THE EXISTING CARRIAGEWAYS AND FOOTPATHS WITHIN THE LIMIT OF WORKS AREA MAY BE TEMPORARILY CLOSED IN PHASES AS AND WHEN REQUIRED.

- LEGEND :
- LIMIT OF WORK SITE
  - Air Monitoring Locations

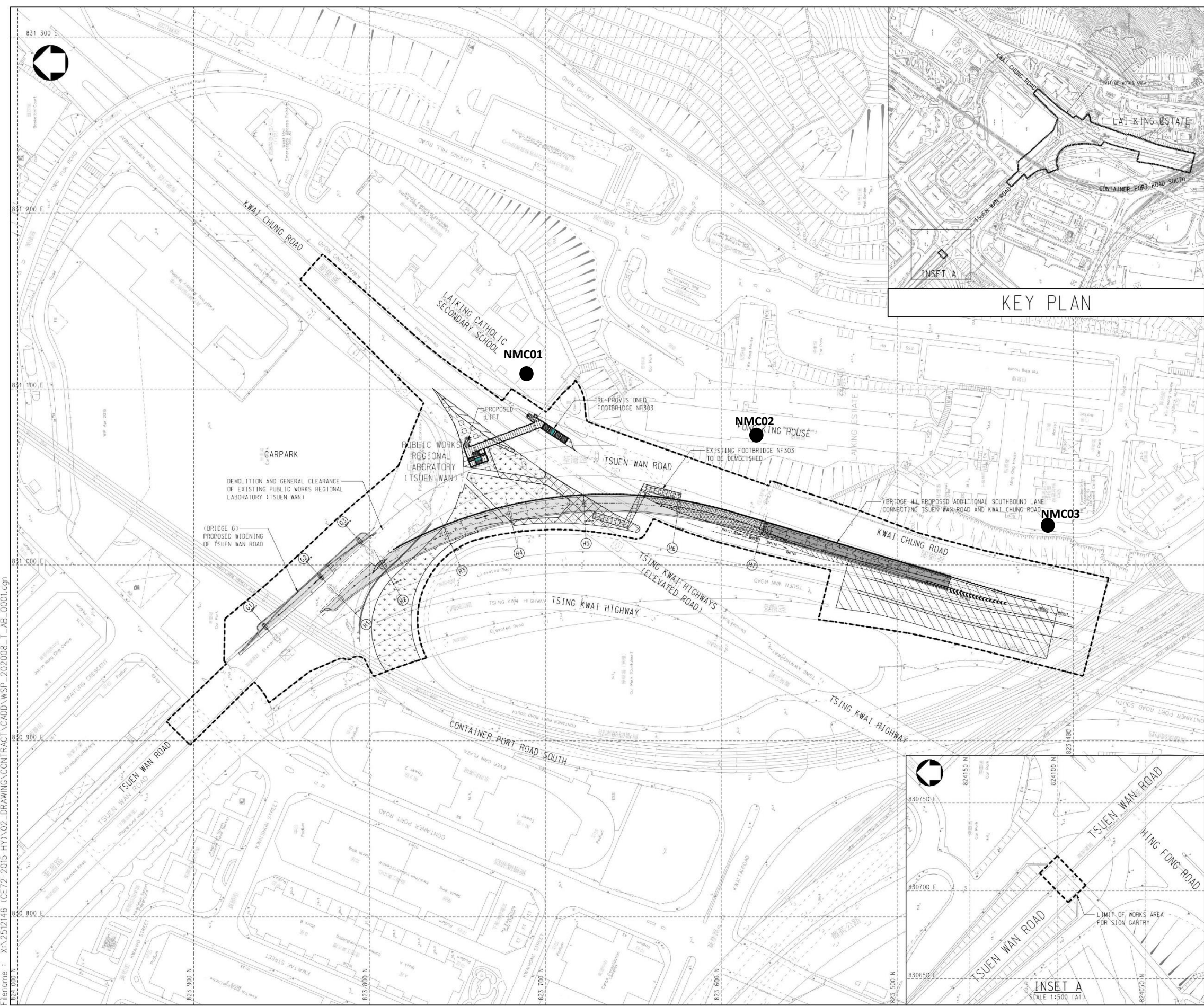
Rev	Issue for Tender	EW	01/21
	Description	By	Date
Consultant			
Project title			
CONTRACT NO. HY/2020/08			
FLYOVER FROM KWAI TSING INTERCHANGE UP-RAMP TO KWAI CHUNG ROAD			
Drawing title			
<b>Figure 2.1</b>			
<b>Location of Air Quality Monitoring Stations</b>			
Drawing no.		Rev.	
HY202008/AB/0001		-	
Drawn	Date	Checked	Approved
CSL	29/11/2019	SH	EW
Scale	Status		
1:1000 (A1)	CONTRACT		
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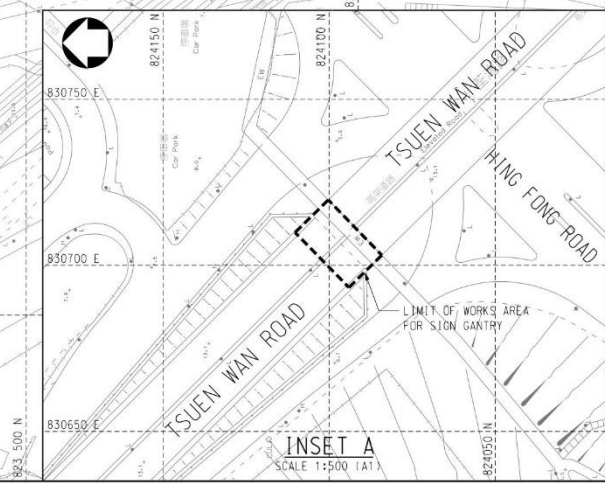
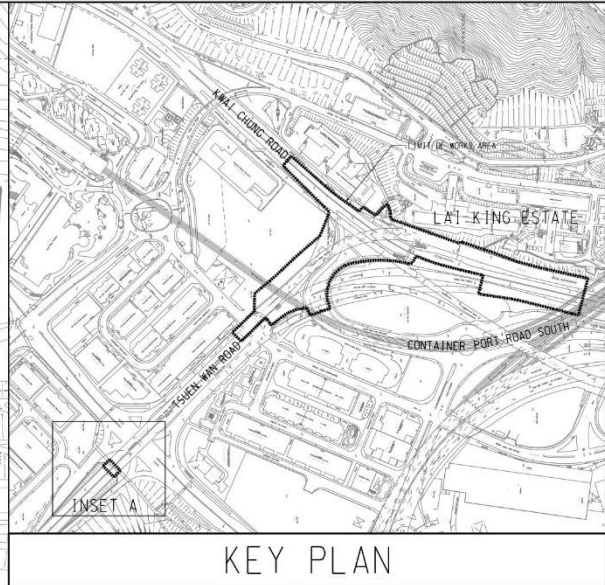
**Figure 3.1**  
**Location of Noise Quality Monitoring Stations**

Date : 4/5/2021  
 Filename : X:\252146 (CE72-2015-HY102-DRAWING\CONTRACT\CADD\WSP\_202008\_T-AB\_0001.dgn



- NOTES :
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
  2. ALL LEVELS ARE APPROXIMATE VALUES AND IN METRES ABOVE HONG KONG PRINCIPAL DATUM.
  3. SECTIONS OF THE EXISTING CARRIAGEWAYS AND FOOTPATHS WITHIN THE LIMIT OF WORKS AREA MAY BE TEMPORARILY CLOSED IN PHASES AS AND WHEN REQUIRED.

- LEGEND :
- LIMIT OF WORK SITE
  - Noise Monitoring Locations



Rev	Issue for Tender	EW	01/21
Rev	Description	By	Date

Consultant

Project title  
 CONTRACT NO. HY/2020/08  
 FLYOVER FROM KWAI TSING INTERCHANGE  
 UP-RAMP TO KWAI CHUNG ROAD

Drawing title  
**Figure 3.1**  
**Location of Noise**  
**Monitoring Stations**

Drawing no.	HY202008/AB/0001			Rev.	
Drawn	Date	Checked	Approved		
CSL	29/11/2019	SH	EW		
Scale	1:1000 (A1)			Status	CONTRACT

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**Appendix A**  
***Baseline Monitoring Schedule for***  
***Air Quality and Noise Monitoring***



**Contract No. HY/2020/08**  
**Flyover from Kwai Tsing Interchange Upramp to Kwai Chung Road**  
**Tentative Environmental Baseline Monitoring Schedule**  
**August 2021**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Aug	2-Aug	3-Aug	4-Aug	5-Aug	6-Aug	7-Aug
				Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP
8-Aug	9-Aug	10-Aug	11-Aug	12-Aug	13-Aug	14-Aug
Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP
15-Aug	16-Aug	17-Aug	18-Aug	19-Aug	20-Aug	21-Aug
Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP
22-Aug	23-Aug	24-Aug	25-Aug	26-Aug	27-Aug	28-Aug
Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP	Noise 24hr TSP & 1hr TSP			
29-Aug	30-Aug	31-Aug				



**Appendix B**  
**IEC's Verification Letter and ER's Agreement Record for**  
**the Proposal of Alternative Sampling Method of using**  
**Direct Reading Methods**



**NATURE & TECHNOLOGIES (HK) LIMITED**

**科技環保(香港)有限公司**

Lot 12, Tam Kon Shan Road, North Tsing Yi, New Territories, Hong Kong

香港新界北青衣担杆山路 12 號地段 Tel 電話: (852) 2877 3122 Fax 傳真: (852) 2511 0922

Email 電郵 : [enquiry@nt.com.hk](mailto:enquiry@nt.com.hk) Website 網址 : <http://www.nt.com.hk>

Date: 16<sup>th</sup> July 2021

Highways Department  
Works Division  
Works Section / NT  
7th Floor, Trade and Industry Tower,  
3 Concorde Road, Kowloon

Dear Sirs,

**Contract No. HY/2020/08**

**Flyover From Kwai Tsing Interchange Upramp to Kwai Chung Road**

**Independent Environmental Checker**

**Proposal of Using Portable Direct Reading Dust Meters**

We refer to the proposal of using portable direct reading dust meters for measuring 1-hour TSP by the Environmental Team (ET) in July 2021. Based on the equipment have been adopted in various EM&A projects according to ET. Please note we have no objections in principle on the captioned proposal.

Should you have any query, please feel free to contact the undersigned at 2877 3122 ([vegawong@nt.com.hk](mailto:vegawong@nt.com.hk)).

Yours Sincerely,

For and on behalf of

Nature & Technologies (HK) Limited

Vega Wong

Independent Environmental Checker

c.c.

WSP (Attn: Mr. Stephen Ho/Mr. Eric Hon) [by Email: [Stephen.YC.Ho@wsp.com](mailto:Stephen.YC.Ho@wsp.com); [Eric.Hon@wsp.com](mailto:Eric.Hon@wsp.com)]

Lam Environmental Services Limited (Attn: Mr. Raymond Dai) [by Email: [raymond dai@lamenviro.com](mailto:raymond dai@lamenviro.com)]

**Jodie Chen**

---

**From:** Hon, Eric Kwok-Wai <Eric.Hon@wsp.com>  
**Sent:** Thursday, July 22, 2021 9:56 AM  
**To:** 'Jodie Chen'  
**Cc:** ent2-4.wd@hyd.gov.hk; Ho, Stephen Yiu-Chung; Kong, Tom Ho-Lok; 'Raymond Dai'; vegawong@nt.com.hk; amok@nt.com.hk; ytchoi@nt.com.hk; CA 3  
**Subject:** RE: HY/2020/08 - Flyover from Kwai Tsing Interchange Upramp to Kwai Chung Road - Proposals of using PDM and wind data from HKO

Dear Jodie,

Referring to the emails below and the meeting amongst HyD, WSP, Nature & Technologies and Lam held on 21 July 2021 at HyD's office, I have no objection in principle to the proposed use of portable dust meter for 1-hr TSP measurement.

Best Regards,

Eric Hon  
Resident Engineer  
HyD Contract No. HY/2020/08

---

**From:** vegawong@nt.com.hk <vegawong@nt.com.hk>  
**Sent:** Friday, July 16, 2021 2:53 PM  
**To:** 'Jodie Chen' <jodiechen@lamenviro.com>; Ho, Stephen Yiu-Chung <Stephen.YC.Ho@wsp.com>  
**Cc:** Hon, Eric Kwok-Wai <Eric.Hon@wsp.com>; Kong, Tom Ho-Lok <Tom.Kong@wsp.com>; 'Raymond Dai' <raymondai@lamenviro.com>; amok@nt.com.hk; ytchoi@nt.com.hk  
**Subject:** RE: HY/2020/08 - Flyover from Kwai Tsing Interchange Upramp to Kwai Chung Road - Proposals of using PDM and wind data from HKO

Dear Jodie,

Thank you for your information and reference. Thus, I have no objections in principle on the proposed use of portable dust meter for 1-hr TSP measurement.

Best regards,

Vega Wong  
Nature & Technologies (HK) Limited  
Tel: (852) 2877 3122  
Mobile: (852) 6113 2368  
Fax: (852) 2511 0922

---

**From:** Jodie Chen <[jodiechen@lamenviro.com](mailto:jodiechen@lamenviro.com)>  
**Sent:** Friday, July 16, 2021 12:51 PM  
**To:** [vegawong@nt.com.hk](mailto:vegawong@nt.com.hk); 'Ho, Stephen Yiu-Chung' <[Stephen.YC.Ho@wsp.com](mailto:Stephen.YC.Ho@wsp.com)>  
**Cc:** 'Hon, Eric Kwok-Wai' <[Eric.Hon@wsp.com](mailto:Eric.Hon@wsp.com)>; 'Kong, Tom Ho-Lok' <[Tom.Kong@wsp.com](mailto:Tom.Kong@wsp.com)>; 'Raymond Dai'



## Appendix C

### ***Calibration Certificates of Monitoring Equipment***



<b>RECALIBRATION DUE DATE:</b>
<b>February 18, 2021</b>

# Certificate of Calibration

Calibration Certification Information			
Cal. Date: February 18, 2020	Rootsmeter S/N: 438320	Ta: 294	°K
Operator: Jim Tisch		Pa: 753.1	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: 0005		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3790	3.2	2.00
2	3	4	1	0.9840	6.4	4.00
3	5	6	1	0.8740	7.9	5.00
4	7	8	1	0.8350	8.8	5.50
5	9	10	1	0.6910	12.6	8.00

Data Tabulation					
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H (Ta/Pa)}$ (y-axis)
1.0001	0.7253	1.4173	0.9958	0.7221	0.8836
0.9959	1.0121	2.0044	0.9915	1.0076	1.2496
0.9939	1.1372	2.2410	0.9895	1.1322	1.3971
0.9927	1.1888	2.3504	0.9883	1.1836	1.4653
0.9876	1.4293	2.8347	0.9833	1.4230	1.7672
<b>QSTD</b>	m=	<b>2.00927</b>	<b>QA</b>	m=	<b>1.25817</b>
	b=	<b>-0.03767</b>		b=	<b>-0.02348</b>
	r=	<b>0.99995</b>		r=	<b>0.99995</b>

Calculations	
<b>Vstd</b> = $\Delta Vol((Pa-\Delta P)/Pstd)(Tstd/Ta)$	<b>Va</b> = $\Delta Vol((Pa-\Delta P)/Pa)$
<b>Qstd</b> = $Vstd/\Delta Time$	<b>Qa</b> = $Va/\Delta Time$
For subsequent flow rate calculations:	
<b>Qstd</b> = $1/m \left( \left( \sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)} \right) - b \right)$	<b>Qa</b> = $1/m \left( \left( \sqrt{\Delta H (Ta/Pa)} \right) - b \right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH:	calibrator manometer reading (in H2O)
ΔP:	rootsmeter manometer reading (mm Hg)
Ta:	actual absolute temperature (°K)
Pa:	actual barometric pressure (mm Hg)
b:	intercept
m:	slope

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



# Certificate of Calibration

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

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

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

Calculations	
$Vstd = \Delta Vol \left( \frac{Pa - \Delta P}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)$	$Va = \Delta Vol \left( \frac{Pa - \Delta P}{Pa} \right)$
$Qstd = Vstd / \Delta Time$	$Qa = Va / \Delta Time$
For subsequent flow rate calculations:	
$Qstd = 1/m \left( \left( \sqrt{\Delta H \left( \frac{Pa}{Pstd} \right) \left( \frac{Tstd}{Ta} \right)} \right) - b \right)$	$Qa = 1/m \left( \left( \sqrt{\Delta H \left( \frac{Ta}{Pa} \right)} \right) - b \right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH: calibrator manometer reading (in H2O)	
ΔP: rootsmeter manometer reading (mm Hg)	
Ta: actual absolute temperature (°K)	
Pa: actual barometric pressure (mm Hg)	
b: intercept	
m: slope	

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



Lam Environmental Services Limited

**Calibration Data for High Volume Sampler (TSP Sampler)**

Location : AMC01  
 Equipment no. : HVS004

Calibration Date : 12-Aug-21  
 Calibration Due Date : 12-Oct-21

**CALIBRATION OF CONTINUOUS FLOW RECORDER**

Ambient Condition			
Temperature, T <sub>a</sub>	302	Kelvin	Pressure, P <sub>a</sub>
			1009 mmHg

Orifice Transfer Standard Information					
Equipment No.	3166	Slope, m <sub>c</sub>	1.88375	Intercept, b <sub>c</sub>	0.03970
Last Calibration Date	03-Aug-21	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	03-Aug-22				

Calibration of TSP						
Calibration Point	Manometer Reading			Q <sub>std</sub> (m <sup>3</sup> / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P <sub>a</sub> /1013.3x298/T <sub>a</sub> ) <sup>1/2</sup> /35.31) Y-axis
	(up)	(down)	(difference)			
1	1.8	1.8	3.6	0.9773	23	22.7975
2	2.5	2.5	5.0	1.1555	30	29.7359
3	3.7	3.7	7.4	1.4103	38	37.6655
4	4.1	4.1	8.2	1.4857	42	41.6302
5	5.0	5.0	10.0	1.6429	51	50.5510

By Linear Regression of Y on X

Slope, m = 39.8907      Intercept, b = -16.7512  
 Correlation Coefficient\* = 0.9915  
 Calibration Accepted = Yes/No\*\*

\* if Correlation Coefficient &lt; 0.990, check and recalibration again.

\*\* Delete as appropriate.

Remarks : \_\_\_\_\_

Calibrated by : Henry Lau  
 Date : 12-Aug-21

Checked by : James Chu  
 Date : 12-Aug-21





Lam Environmental Services Limited

**Calibration Data for High Volume Sampler (TSP Sampler)**

Location : AMC02  
 Equipment no. : HVS015

Calibration Date : 12-Aug-21  
 Calibration Due Date : 12-Oct-21

**CALIBRATION OF CONTINUOUS FLOW RECORDER**

Ambient Condition			
Temperature, T <sub>a</sub>	302	Kelvin	Pressure, P <sub>a</sub>
			1009 mmHg

Orifice Transfer Standard Information					
Equipment No.	3166	Slope, m <sub>c</sub>	1.88375	Intercept, b <sub>c</sub>	0.03970
Last Calibration Date	03-Aug-21	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	03-Aug-22				

Calibration of TSP						
Calibration Point	Manometer Reading			Q <sub>std</sub> (m <sup>3</sup> / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P <sub>a</sub> /1013.3x298/T <sub>a</sub> ) <sup>1/2</sup> /35.31) Y-axis
	(up)	(down)	(difference)			
1	1.4	1.4	2.8	0.8594	29	28.7447
2	2.1	2.1	4.2	1.0573	34	33.7007
3	3.2	3.2	6.4	1.3101	42	41.6302
4	4.4	4.4	8.8	1.5398	48	47.5774
5	5.4	5.4	10.8	1.7081	52	51.5422

By Linear Regression of Y on X

Slope, m = 27.3494      Intercept, b = 5.2231  
 Correlation Coefficient\* = 0.9990  
 Calibration Accepted = Yes/No\*\*

\* if Correlation Coefficient &lt; 0.990, check and recalibration again.

\*\* Delete as appropriate.

Remarks : \_\_\_\_\_

Calibrated by : Henry Lau  
 Date : 12-Aug-21

Checked by : James Chu  
 Date : 12-Aug-21



Lam Environmental Services Limited

**Calibration Data for High Volume Sampler (TSP Sampler)**

Location : AMC03A  
 Equipment no. : HVS014

Calibration Date : 12-Aug-21  
 Calibration Due Date : 12-Oct-21

**CALIBRATION OF CONTINUOUS FLOW RECORDER**

Ambient Condition			
Temperature, T <sub>a</sub>	302	Kelvin	Pressure, P <sub>a</sub>
			1009 mmHg

Orifice Transfer Standard Information					
Equipment No.	3166	Slope, m <sub>c</sub>	1.88375	Intercept, b <sub>c</sub>	0.03970
Last Calibration Date	03-Aug-21	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	03-Aug-22				

Calibration of TSP						
Calibration Point	Manometer Reading			Q <sub>std</sub> (m <sup>3</sup> / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P <sub>a</sub> /1013.3x298/T <sub>a</sub> ) <sup>1/2</sup> /35.31) Y-axis
	(up)	(down)	(difference)			
1	1.4	1.4	2.8	0.8594	34	33.7007
2	2.1	2.1	4.2	1.0573	40	39.6479
3	3.3	3.3	6.6	1.3307	47	46.5862
4	4.4	4.4	8.8	1.5398	52	51.5422
5	5.4	5.4	10.8	1.7081	60	59.4718

By Linear Regression of Y on X

Slope, m = 28.8808      Intercept, b = 8.6715  
 Correlation Coefficient\* = 0.9935  
 Calibration Accepted = Yes/No\*\*

\* if Correlation Coefficient &lt; 0.990, check and recalibration again.

\*\* Delete as appropriate.

Remarks : \_\_\_\_\_  
 \_\_\_\_\_

Calibrated by : Henry Lau  
 Date : 12-Aug-21

Checked by : James Chu  
 Date : 12-Aug-21



Lam Environmental Services Limited

**Calibration Data for High Volume Sampler (TSP Sampler)**

Location : GCE Calibration Date : 28-Dec-20  
 Equipment no. : HVS000 Calibration Due Date : 27-Feb-21

**CALIBRATION OF CONTINUOUS FLOW RECORDER**

Ambient Condition			
Temperature, T <sub>a</sub>	294	Kelvin	Pressure, P <sub>a</sub>
			1015 mmHg

Orifice Transfer Standard Information					
Equipment No.	0005	Slope, m <sub>c</sub>	2.00927	Intercept, b <sub>c</sub>	-0.03767
Last Calibration Date	18-Feb-20	$\left( \frac{H \times P_a}{1013.3 \times 298 / T_a} \right)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	17-Feb-21				

Calibration of TSP						
Calibration Point	Manometer Reading			Q <sub>std</sub> (m <sup>3</sup> / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P <sub>a</sub> /1013.3x298/T <sub>a</sub> ) <sup>1/2</sup> /35.31) Y-axis
	(up)	(down)	(difference)			
1	1.5	1.5	3.0	0.8874	35	35.2668
2	2.3	2.3	4.6	1.0943	42	42.3202
3	3.4	3.4	6.8	1.3265	49	49.3736
4	4.2	4.2	8.4	1.4722	54	54.4117
5	5.0	5.0	10.0	1.6046	55	55.4193

By Linear Regression of Y on X

Slope, m = 29.2707 Intercept, b = 9.9801  
 Correlation Coefficient\* = 0.9913  
 Calibration Accepted = Yes/No\*\*

\* if Correlation Coefficient &lt; 0.990, check and recalibration again.

\*\* Delete as appropriate.

Remarks : \_\_\_\_\_

Calibrated by : Alan Ng Checked by : James Chu  
 Date : 28-Dec-20 Date : 28-Dec-20



Lam Environmental Services Limited

**Calibration Data for High Volume Sampler (TSP Sampler)**

Location : CCC2 Calibration Date : 08-Sep-20  
 Equipment no. : HVS018 Calibration Due Date : 08-Nov-20

**CALIBRATION OF CONTINUOUS FLOW RECORDER**

Ambient Condition			
Temperature, T <sub>a</sub>	300	Kelvin	Pressure, P <sub>a</sub>
			1011 mmHg

Orifice Transfer Standard Information					
Equipment No.	0005	Slope, m <sub>c</sub>	2.00927	Intercept, b <sub>c</sub>	-0.03767
Last Calibration Date	18-Feb-20	$(H \times P_a / 1013.3 \times 298 / T_a)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	18-Feb-21				

Calibration of TSP						
Calibration Point	Manometer Reading			Q <sub>std</sub> (m <sup>3</sup> / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P <sub>a</sub> /1013.3x298/T <sub>a</sub> ) <sup>1/2</sup> /35.31) Y-axis
	(up)	(down)	(difference)			
1	1.7	1.7	3.4	0.9323	22	21.9016
2	2.4	2.4	4.8	1.1043	26	25.8838
3	3.1	3.1	6.2	1.2525	30	29.8659
4	3.8	3.8	7.6	1.3847	35	34.8435
5	4.7	4.7	9.4	1.5378	41	40.8167

By Linear Regression of Y on X

Slope, m = 31.2483 Intercept, b = -8.1577  
 Correlation Coefficient\* = 0.9927  
 Calibration Accepted = Yes/No\*\*

\* if Correlation Coefficient &lt; 0.990, check and recalibration again.

\*\* Delete as appropriate.

Remarks : \_\_\_\_\_

Calibrated by : Alan Ng Checked by : James Chu  
 Date : 08-Sep-20 Date : 08-Sep-20



Lam Environmental Services Limited

**Calibration Data for High Volume Sampler (TSP Sampler)**

Location : CCC2 Calibration Date : 06-May-21  
 Equipment no. : HVS018 Calibration Due Date : 06-Jul-21

**CALIBRATION OF CONTINUOUS FLOW RECORDER**

Ambient Condition			
Temperature, T <sub>a</sub>	298	Kelvin	Pressure, P <sub>a</sub>
			1015 mmHg

Orifice Transfer Standard Information					
Equipment No.	3166	Slope, m <sub>c</sub>	2.08877	Intercept, b <sub>c</sub>	-0.02270
Last Calibration Date	17-Jul-20	$\left( H \times P_a / 1013.3 \times 298 / T_a \right)^{1/2}$ $= m_c \times Q_{std} + b_c$			
Next Calibration Date	17-Jul-21				

Calibration of TSP						
Calibration Point	Manometer Reading			Q <sub>std</sub> (m <sup>3</sup> / min.) X-axis	Continuous Flow Recorder, W (CFM)	IC (W(P <sub>a</sub> /1013.3x298/T <sub>a</sub> ) <sup>1/2</sup> /35.31) Y-axis
	(up)	(down)	(difference)			
1	1.2	1.2	2.4	0.7532	32	32.0268
2	2.5	2.5	5.0	1.0823	42	42.0352
3	3.2	3.2	6.4	1.2230	49	49.0411
4	4.1	4.1	8.2	1.3830	52	52.0436
5	5.3	5.3	10.6	1.5709	59	59.0495

By Linear Regression of Y on X

Slope, m = 33.0242 Intercept, b = 7.1288  
 Correlation Coefficient\* = 0.9958  
 Calibration Accepted = Yes/No\*\*

\* if Correlation Coefficient &lt; 0.990, check and recalibration again.

\*\* Delete as appropriate.

Remarks : \_\_\_\_\_

Calibrated by : Alan Ng Checked by : James Chu  
 Date : 06-May-21 Date : 06-May-21



**Portable Dust Meter Performance Check Record**

**Portable Dust Meter**

Type : Particulate Monitor  
 Manufacturer : Metone AEROCET 831  
 Model Number : 831  
 Serial Number : W15448  
 Performance Check Date : 03-Nov-20

**Standard Equipment**

Type : High Volume Sampler  
 Manufacturer : TISCH  
 Model Number : TE-5170  
 Equipment Number : HVS018  
 Last Calibration Date : 08-Sep-20

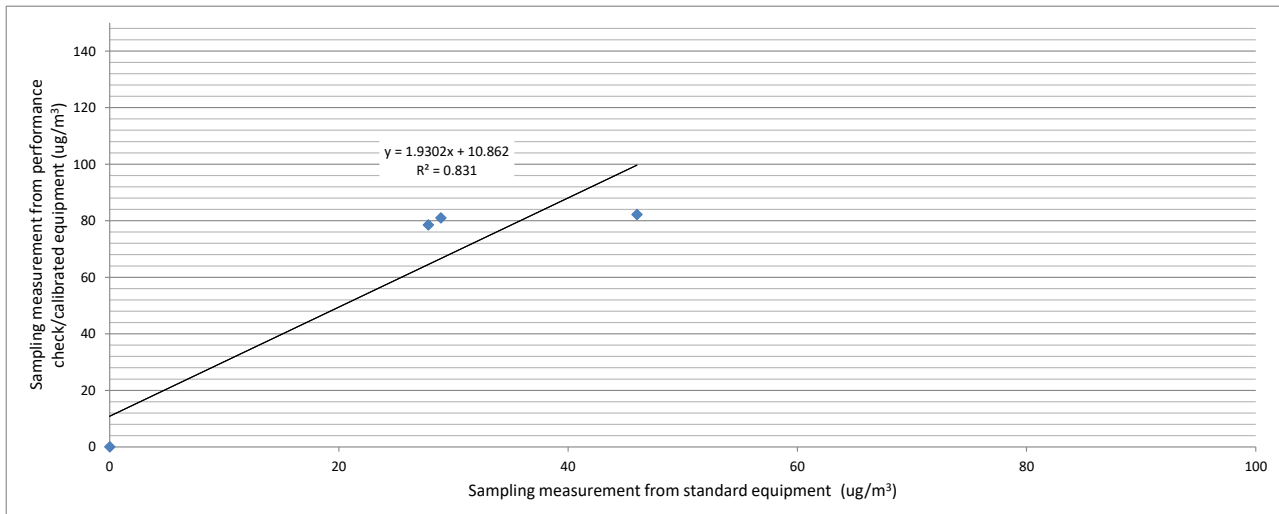
**Portable Dust Meter Performance Check Results**

Trial no. in 1-hr period	Time	Mean Pressure (hPa)	Mean Temp (°C)	Concentration in ug/m <sup>3</sup> (Standard equipment) (X - Axis)	Concentration in ug/m <sup>3</sup> (Performance Check / Calibrated equipment) (Y - Axis)
Zero Check	2/11/2020 08:00	1015	25	0	0
1	3/11/2020 08:24	1017	24	29	81
2	3/11/2020 09:25	1017	24	28	79
3	3/11/2020 10:26	1017	24	46	82

\* Filter paper weighting was conducted by HOKLAS accredited laboratory.

**Linear Regression of Y on X**

Slope (K- factor) : 0.5000  
 Correlation Coefficient : 0.9116  
 Validity of Performance Check / Calibration Record : 3/11/2021



Operator: Alan Ng Date: 03-Nov-20  
 Checked by: James Chu Date: 04-Nov-20



Portable Dust Meter Performance Check Record

Portable Dust Meter

Type : Particulate Monitor
Manufacturer : Metone AEROCET 831
Model Number : 831
Serial Number : W15449
Performance Check Date : 18-Jun-21

Standard Equipment

Type : High Volume Sampler
Manufacturer : TISCH
Model Number : TE-5170
Equipment Number : HVS018
Last Calibration Date : 06-May-21

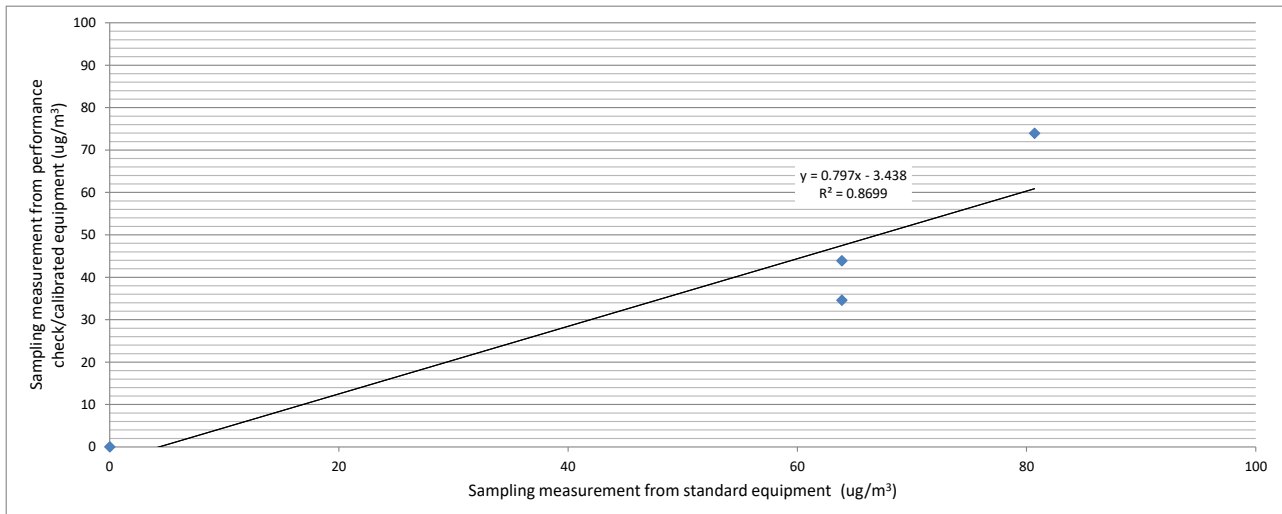
Portable Dust Meter Performance Check Results

Table with 6 columns: Trial no. in 1-hr period, Time, Mean Pressure (hPa), Mean Temp (°C), Concentration in ug/m³ (Standard equipment) (X - Axis), Concentration in ug/m³ (Performance Check / Calibrated equipment) (Y - Axis). Rows include Zero Check and trials 1, 2, 3.

\* Filter paper weighting was conducted by HOKLAS accredited laboratory.

Linear Regression of Y on X

Slope (K- factor) : 1.1000
Correlation Coefficient : 0.9327
Validity of Performance Check / Calibration Record : 18/6/2022



Operator: Alan Ng

Date: 18-Jun-21

Checked by: James Chu

Date: 19-Jun-21



Portable Dust Meter Performance Check Record

Portable Dust Meter

Type : Particulate Monitor
Manufacturer : Metone AEROCET 831
Model Number : 831
Serial Number : W16848
Performance Check Date : 29-Dec-20

Standard Equipment

Type : High Volume Sampler
Manufacturer : TISCH
Model Number : TE-5170
Equipment Number : HVS000
Last Calibration Date : 28-Dec-20

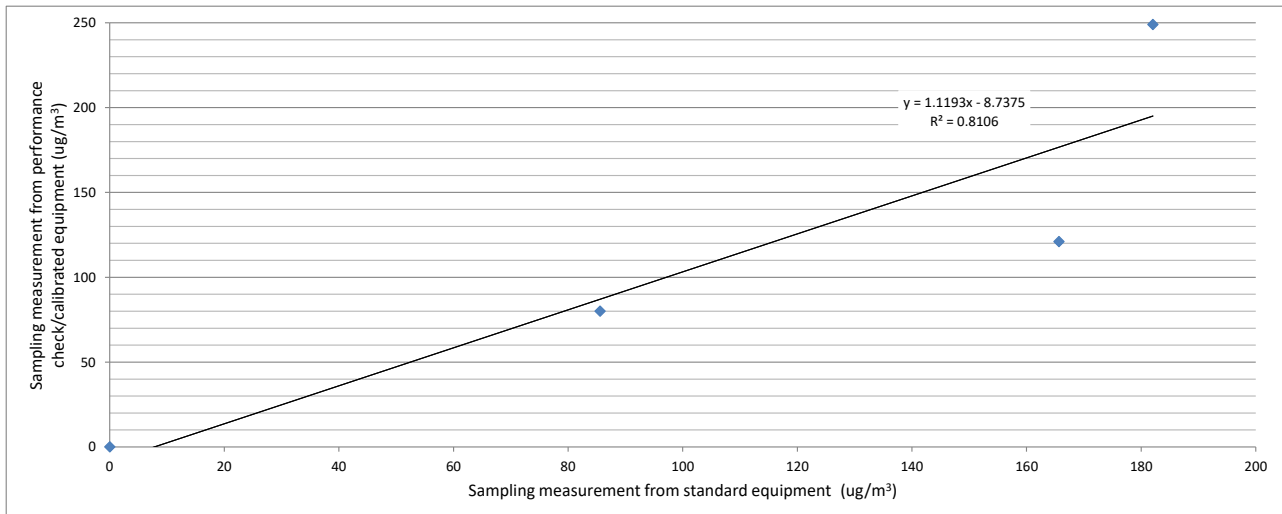
Portable Dust Meter Performance Check Results

Table with 6 columns: Trial no. in 1-hr period, Time, Mean Pressure (hPa), Mean Temp (°C), Concentration in ug/m³ (Standard equipment), Concentration in ug/m³ (Performance Check / Calibrated equipment). Rows include Zero Check and three trials on 29/12/2020.

\* Filter paper weighting was conducted by HOKLAS accredited laboratory.

Linear Regression of Y on X

Slope (K- factor) : 0.8000
Correlation Coefficient : 0.9003
Validity of Performance Check / Calibration Record : 29/12/2021



Operator: Henry Lau

Date: 29-Dec-20

Checked by: James Chu

Date: 30-Dec-20



# 出厂检验报告

产品名称：在线式风速风向仪

产品型号：YGY-FSXY1

被检产品 SN 号：YG 21071630T0924

武汉辰云科技有限公司

2021 年 8 月 9 日

## 1. 检验类别

### 一、在线式风速风向仪

检验项目	检测要求	检测结果
外观检查	1. 要求成品外观无破损，各部件完整，无掉漆，无凹陷变形； 2. 采集仪内部无日视可见灰尘杂物油污，布局整洁美观； 3. 芯线，航插完整，保护皮无破损，无油污；	
结构检查	1. 内部电路板固定牢固可靠，无挤压，无晃动； 2. 检查防尘防水措施是否到位，密封是否严密，端子与外壳缝隙不宜过大，以不透光为原则；	

### 二、风速风向传感器示值校准结果

实际风速 (m/s)	指示风速 (m/s)
0.5	启动
1	0.8
5	4.8
10	9.9
15	14.8
20	20.2
25	25.2
30	29.7

实际风向 (°)	指示风向 (°)
45	44
90	89
135	136
200	202
235	234
275	275
315	313
359	0

## 2. 备注 NOTE

数据采集仪数据显示风速、风向值正常，通过 RJ45 通讯与电脑连接，  
仪器软件数据显示正常。

## 3. 检验结论：

各项检测和实验结果表明：

                     在线式风速风向仪                      仪器全部测试通过，系统硬件测试符合工厂  
( 武汉易谷科技有限公司检验标准                      ) 测试标准。符合技术文件的要求，检  
验合格，准予出厂。

## 4. 校准的环境条件：

环境条件： 温度：27.5，相对湿度：61.0%RH，大气压力：1013.3hpa

测试员：   李元华

检验员： 吴肖

测试日期：2021 年 8 月 9 日





## CERTIFICATE OF CALIBRATION

Certificate No.: 21CA0526 02-02 Page 1 of 2

### Item tested

Description:	Sound Level Meter (Type 1)	Microphone	Preamp
Manufacturer:	Larson Davis	PCB	PCB
Type/Model No.:	LxT1	377B02	PRMLxT1L
Serial/Equipment No.:	0004796	155507	042621
Adaptors used:	-	-	-

### Item submitted by

Customer Name: Lam Environmental Services Limited.  
Address of Customer: -  
Request No.: -  
Date of receipt: 26-May-2021

Date of test: 27-May-2021

### Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-Aug-2021	CIGISMEC
Signal generator	DS 360	61227	31-Dec-2021	CEPREI

### Ambient conditions

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

### Test specifications

- The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of  $\pm 20\%$ .
- The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsiveness of the Sound Level Meter.

### Test results

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

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

Actual Measurement data are documented on worksheets.

Approved Signatory:

  
Feng Junqi

Date: 28-May-2021

Company Chop:



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



## CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 21CA0526 02-02 Page 2 of 2

### 1, Electrical Tests

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

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

### 2, Acoustic tests

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

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

### 3, Response to associated sound calibrator

N/A

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

Calibrated by:

Date: 27-May-2021

Fung Chi Yip

- End -

Checked by:

Date: 28-May-2021

Chan Yuk Yiu

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



Test Data for Sound Level Meter

Sound level meter type:	LxT1	Serial No.	0004796	Date	27-May-2021
Microphone type:	377B02	Serial No.	155507		
Preamp type:	PRMLxT1L	Serial No.	042621	Report:	21CA0526 02-02

**SELF GENERATED NOISE TEST**

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

Noise level in A weighting	9.4	dB
Noise level in C weighting	13.3	dB
Noise level in Lin	21.5	dB

**LINEARITY TEST**

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

Reference/Expected level	Actual level		Tolerance	Deviation	
	non-integrated	integrated		non-integrated	integrated
dB	dB	dB	+/- dB	dB	dB
94.0	94.0	94.0	0.7	0.0	0.0
99.0	99.0	99.0	0.7	0.0	0.0
104.0	104.0	104.0	0.7	0.0	0.0
109.0	109.0	109.0	0.7	0.0	0.0
114.0	114.0	114.0	0.7	0.0	0.0
115.0	115.0	115.0	0.7	0.0	0.0
116.0	116.0	116.0	0.7	0.0	0.0
117.0	117.0	117.0	0.7	0.0	0.0
118.0	118.0	118.0	0.7	0.0	0.0
119.0	119.0	119.0	0.7	0.0	0.0
120.0	120.0	120.0	0.7	0.0	0.0
89.0	89.0	89.0	0.7	0.0	0.0
84.0	84.0	84.0	0.7	0.0	0.0
79.0	79.0	79.0	0.7	0.0	0.0
74.0	73.9	73.9	0.7	-0.1	-0.1
69.0	68.9	68.9	0.7	-0.1	-0.1
64.0	63.9	63.9	0.7	-0.1	-0.1
59.0	58.9	58.9	0.7	-0.1	-0.1
54.0	53.9	53.9	0.7	-0.1	-0.1
49.0	48.9	48.9	0.7	-0.1	-0.1
44.0	43.9	43.9	0.7	-0.1	-0.1
39.0	38.9	38.9	0.7	-0.1	-0.1
34.0	33.9	33.9	0.7	-0.1	-0.1
33.0	32.9	32.9	0.7	-0.1	-0.1



Test Data for Sound Level Meter

Page 2 of 5

Sound level meter type:	LxT1	Serial No.	0004796	Date	27-May-2021
Microphone type:	377B02	Serial No.	155507		
Preamp type:	PRMLxT1L	Serial No.	042621	Report:	21CA0526 02-02

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

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

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

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

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

### FREQUENCY WEIGHTING TEST

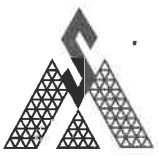
The frequency response of the weighting networks are tested at octave intervals over the frequency ranges 31.5 Hz to 12500 Hz. The signal level at 1000 Hz is set to give an indication of the reference SPL.

Frequency weighting A:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
				+	-	
Hz	dB	dB	dB			dB
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	54.6	54.5	1.5	1.5	-0.1
63.1	94.0	67.8	67.8	1.5	1.5	0.0
125.9	94.0	77.9	77.9	1.0	1.0	0.0
251.2	94.0	85.4	85.4	1.0	1.0	0.0
501.2	94.0	90.8	90.8	1.0	1.0	0.0
1995.0	94.0	95.2	95.2	1.0	1.0	0.0
3981.0	94.0	95.0	95.0	1.0	1.0	0.0
7943.0	94.0	92.9	92.9	1.5	3.0	0.0
12590.0	94.0	89.7	89.7	3.0	6.0	0.0

Frequency weighting C:

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



Test Data for Sound Level Meter

Page 3 of 5

Sound level meter type:	LxT1	Serial No.	0004796	Date	27-May-2021
Microphone type:	377B02	Serial No.	155507		
Preamp type:	PRMLxT1L	Serial No.	042621	Report:	21CA0526 02-02

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

Frequency weighting Lin:

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

TIME WEIGHTING FAST TEST

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

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

TIME WEIGHTING SLOW TEST

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

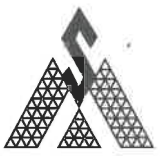
Ref. level dB	Expected level dB	Actual level dB	Tolerance(dB)		Deviation dB
			+	-	
116.0	111.9	111.9	1.0	1.0	0.0

PEAK RESPONSE TEST

The onset time of the peak detector is tested on the reference range by comparing the response to a 100 us rectangular test pulse with the response to a 10 ms reference pulse of the same amplitude. The amplitude of the 10 ms reference pulse is such as to produce an indication 1 dB below the upper limit of the primary indicator range. Positive polarities: (Weighting Z, set the generator signal to single, Lzpeak)

Ref. level dB	Response to 10 ms dB	Response to 100 us dB	Tolerance +/- dB	Deviation dB
119.0	119.0	118.6	2.0	-0.4





Test Data for Sound Level Meter

Page 4 of 5

Sound level meter type: LxT1 Serial No. 0004796 Date 27-May-2021  
Microphone type: 377B02 Serial No. 155507  
Preamp type: PRMLxT1L Serial No. 042621 Report: 21CA0526 02-02

Negative polarities:

Ref. level	Response to 10 ms	Response to 100 us	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
119.0	119.0	118.6	2.0	-0.4

RMS ACCURACY TEST

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

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

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

TIME WEIGHTING IMPULSE TEST

Time weighting I is tested on the reference range (Set the SLM to LAImax)

Test frequency: 2000 Hz  
Amplitude: The upper limit of the primary indicator range.

Single sinusoidal burst of duration 5 ms:

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

Repeated at 100 Hz

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

TIME AVERAGING TEST

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

Frequency of tone burst: 4000 Hz

Duration of tone burst: 1 ms

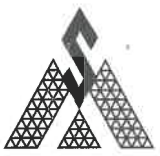
Repetition Time	Level of tone burst	Expected Leq	Actual Leq	Tolerance	Deviation	Remarks
msec	dB	dB	dB	+/- dB	dB	
1000	90.0	90.0	89.9	1.0	-0.1	60s integ.
10000	80.0	80.0	79.9	1.0	-0.1	6min. integ.

PULSE RANGE AND SOUND EXPOSURE LEVEL TEST

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

Test frequency: 4000 Hz

Integration time: 10 sec



Test Data for Sound Level Meter

Sound level meter type: LxT1 Serial No. 0004796 Date 27-May-2021  
 Microphone type: 377B02 Serial No. 155507  
 Preamp type: PRMLxT1L Serial No. 042621 Report: 21CA0526 02-02

The integrating sound level meter set to Leq:

Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10	88.0	58.0	58.0	1.7	0.0

The integrating sound level meter set to SEL:

Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10.0	88.0	68.0	68.0	1.7	0.0

OVERLOAD INDICATION TEST

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

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

Level	Level reduced by	Further reduced	Difference	Tolerance	Deviation
at overload (dB)	1 dB	3 dB	dB	dB	dB
113.1	112.1	109.1	3.0	1.0	0.0

For integrating SLM, with the instrument indicating Leq.

For integrating SLM, with the instrument indicating Leq and set to the reference range. The test signal as following:  
 The test tone burst signal is superimposed on a baseline signal corresponding to the lower limit of reference range  
 Test frequency: 4000 Hz  
 Integration time: 10 sec  
 Single burst duration: 1 msec

Rms level	Level reduced by	Expected level	Actual level	Tolerance	Deviation
at overload (dB)	1 dB	dB	dB	dB	dB
119.8	118.8	78.8	78.8	2.2	0.0

ACOUSTIC TEST

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

Frequency	Expected level	Actual level	Tolerance (dB)		Deviation
			+	-	
Hz	dB	Measured (dB)			dB
1000	94.0	94.0	0.0	0.0	0.0
125	77.9	77.9	1.0	1.0	0.0
8000	92.9	93.4	1.5	3.0	0.5

-----END-----



## CERTIFICATE OF CALIBRATION

Certificate No.: 21CA0526 02-01 Page 1 of 2

### Item tested

Description:	Sound Level Meter (Type 1)	Microphone	Preamp
Manufacturer:	Larson Davis	PCB	PCB
Type/Model No.:	LxT1	377B02	PRMLxT1L
Serial/Equipment No.:	0004797	163704	042622
Adaptors used:	-	-	-

### Item submitted by

Customer Name: Lam Environmental Services Limited.  
 Address of Customer: -  
 Request No.: -  
 Date of receipt: 26-May-2021

Date of test: 27-May-2021

### Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-Aug-2021	CIGISMEC
Signal generator	DS 360	61227	31-Dec-2021	CEPREI

### Ambient conditions

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

### Test specifications

- The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.
- The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsiveness of the Sound Level Meter.

### Test results

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

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

Actual Measurement data are documented on worksheets.

Approved Signatory:  Date: 28-May-2021 Company Chop: 

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



## CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 21CA0526 02-01 Page 2 of 2

### 1, Electrical Tests

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

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

### 2, Acoustic tests

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

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

### 3, Response to associated sound calibrator

N/A

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

- End -

Calibrated by:

Fung Chi Yip

Date: 27-May-2021

Checked by:

Chan Yuk Yiu

Date: 28-May-2021

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



Test Data for Sound Level Meter

Sound level meter type:	LxT1	Serial No.	0004797	Date	27-May-2021
Microphone type:	377B02	Serial No.	163704		
Preamp type:	PRMLxT1L	Serial No.	042622	Report:	21CA0526 02-01

**SELF GENERATED NOISE TEST**

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

Noise level in A weighting	10.6	dB
Noise level in C weighting	14.8	dB
Noise level in Lin	22.3	dB

**LINEARITY TEST**

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

Reference/Expected level	Actual level		Tolerance	Deviation	
	non-integrated	integrated		non-integrated	integrated
dB	dB	dB	+/- dB	dB	dB
94.0	94.0	94.0	0.7	0.0	0.0
99.0	99.0	99.0	0.7	0.0	0.0
104.0	104.0	104.0	0.7	0.0	0.0
109.0	109.0	109.0	0.7	0.0	0.0
114.0	114.0	114.0	0.7	0.0	0.0
115.0	115.0	115.0	0.7	0.0	0.0
116.0	116.0	116.0	0.7	0.0	0.0
117.0	117.0	117.0	0.7	0.0	0.0
118.0	118.0	118.0	0.7	0.0	0.0
119.0	119.0	119.0	0.7	0.0	0.0
120.0	120.0	120.0	0.7	0.0	0.0
89.0	89.0	89.0	0.7	0.0	0.0
84.0	84.0	84.0	0.7	0.0	0.0
79.0	79.0	79.0	0.7	0.0	0.0
74.0	73.9	73.9	0.7	-0.1	-0.1
69.0	68.9	68.9	0.7	-0.1	-0.1
64.0	63.9	63.9	0.7	-0.1	-0.1
59.0	58.9	58.9	0.7	-0.1	-0.1
54.0	53.9	53.9	0.7	-0.1	-0.1
49.0	48.9	48.9	0.7	-0.1	-0.1
44.0	43.9	43.9	0.7	-0.1	-0.1
39.0	38.9	38.9	0.7	-0.1	-0.1
34.0	33.9	33.9	0.7	-0.1	-0.1
33.0	32.9	32.9	0.7	-0.1	-0.1



Test Data for Sound Level Meter

Page 2 of 5

Sound level meter type: LxT1 Serial No. 0004797 Date 27-May-2021  
Microphone type: 377B02 Serial No. 163704  
Preamp type: PRMLxT1L Serial No. 042622 Report: 21CA0526 02-01

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

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

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

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

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

## FREQUENCY WEIGHTING TEST

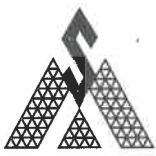
The frequency response of the weighting networks are tested at octave intervals over the frequency ranges 31.5 Hz to 12500 Hz. The signal level at 1000 Hz is set to give an indication of the reference SPL.

Frequency weighting A:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
				+	-	
Hz	dB	dB	dB			dB
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	54.6	54.5	1.5	1.5	-0.1
63.1	94.0	67.8	67.8	1.5	1.5	0.0
125.9	94.0	77.9	77.9	1.0	1.0	0.0
251.2	94.0	85.4	85.3	1.0	1.0	-0.1
501.2	94.0	90.8	90.7	1.0	1.0	-0.1
1995.0	94.0	95.2	95.2	1.0	1.0	0.0
3981.0	94.0	95.0	95.0	1.0	1.0	0.0
7943.0	94.0	92.9	92.9	1.5	3.0	0.0
12590.0	94.0	89.7	89.7	3.0	6.0	0.0

Frequency weighting C:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
				+	-	
Hz	dB	dB	dB			dB
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	91.0	91.0	1.5	1.5	0.0
63.1	94.0	93.2	93.1	1.5	1.5	-0.1
125.9	94.0	93.8	93.8	1.0	1.0	0.0
251.2	94.0	94.0	94.0	1.0	1.0	0.0
501.2	94.0	94.0	94.0	1.0	1.0	0.0



Test Data for Sound Level Meter

Page 3 of 5

Sound level meter type: LxT1 Serial No. 0004797 Date 27-May-2021  
Microphone type: 377B02 Serial No. 163704  
Preamp type: PRMLxT1L Serial No. 042622 Report: 21CA0526 02-01

1995.0	94.0	93.8	93.8	1.0	1.0	0.0
3981.0	94.0	93.2	93.2	1.0	1.0	0.0
7943.0	94.0	91.0	91.0	1.5	3.0	0.0
12590.0	94.0	87.8	87.7	3.0	6.0	-0.1

Frequency weighting Lin:

Frequency Hz	Ref. level dB	Expected level dB	Actual level dB	Tolerance(dB)		Deviation dB
				+	-	
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	94.0	93.9	1.5	1.5	-0.1
63.1	94.0	94.0	93.9	1.5	1.5	-0.1
125.9	94.0	94.0	94.0	1.0	1.0	0.0
251.2	94.0	94.0	94.0	1.0	1.0	0.0
501.2	94.0	94.0	94.0	1.0	1.0	0.0
1995.0	94.0	94.0	94.0	1.0	1.0	0.0
3981.0	94.0	94.0	94.0	1.0	1.0	0.0
7943.0	94.0	94.0	94.0	1.5	3.0	0.0
12590.0	94.0	94.0	94.0	3.0	6.0	0.0

TIME WEIGHTING FAST TEST

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

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

TIME WEIGHTING SLOW TEST

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

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

PEAK RESPONSE TEST

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

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

Ref. level dB	Response to 10 ms dB	Response to 100 us dB	Tolerance	Deviation dB
			+/- dB	
119.0	119.0	118.7	2.0	-0.3



Test Data for Sound Level Meter

Page 4 of 5

Sound level meter type: LxT1 Serial No. 0004797 Date 27-May-2021  
Microphone type: 377B02 Serial No. 163704  
Preamp type: PRMLxT1L Serial No. 042622 Report: 21CA0526 02-01

Negative polarities:

Ref. level	Response to 10 ms	Response to 100 us	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
119.0	119.0	118.7	2.0	-0.3

RMS ACCURACY TEST

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

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

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

TIME WEIGHTING IMPULSE TEST

Time weighting I is tested on the reference range (Set the SLM to LAImax)

Test frequency: 2000 Hz  
Amplitude: The upper limit of the primary indicator range.

Single sinusoidal burst of duration 5 ms:

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

Repeated at 100 Hz

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

TIME AVERAGING TEST

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

Frequency of tone burst: 4000 Hz

Duration of tone burst: 1 ms

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

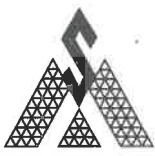
PULSE RANGE AND SOUND EXPOSURE LEVEL TEST

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

Test frequency: 4000 Hz

Integration time: 10 sec





Test Data for Sound Level Meter

Page 5 of 5

Sound level meter type: LxT1 Serial No. 0004797 Date 27-May-2021  
Microphone type: 377B02 Serial No. 163704  
Preamp type: PRMLxT1L Serial No. 042622 Report: 21CA0526 02-01

The integrating sound level meter set to Leq:

Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10	88.0	58.0	58.0	1.7	0.0

The integrating sound level meter set to SEL:

Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10.0	88.0	68.0	68.0	1.7	0.0

OVERLOAD INDICATION TEST

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

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

Level	Level reduced by	Further reduced	Difference	Tolerance	Deviation
at overload (dB)	1 dB	3 dB	dB	dB	dB
113.4	112.4	109.4	3.0	1.0	0.0

For integrating SLM, with the instrument indicating Leq.

For integrating SLM, with the instrument indicating Leq and set to the reference range. The test signal as following:  
The test tone burst signal is superimposed on a baseline signal corresponding to the lower limit of reference range  
Test frequency: 4000 Hz  
Integration time: 10 sec  
Single burst duration: 1 msec

Rms level	Level reduced by	Expected level	Actual level	Tolerance	Deviation
at overload (dB)	1 dB	dB	dB	dB	dB
120.2	119.2	79.2	79.2	2.2	0.0

ACOUSTIC TEST

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

Frequency	Expected level	Actual level	Tolerance (dB)		Deviation
			+	-	
Hz	dB	Measured (dB)			dB
1000	94.0	94.0	0.0	0.0	0.0
125	77.9	78.1	1.0	1.0	0.2
8000	92.9	91.2	1.5	3.0	-1.7

-----END-----

# Calibration Certificate

Certificate Number 2021001443

Customer:

Lam Environmental Services Ltd

<b>Model Number</b>	LxT SE	<b>Procedure Number</b>	D0001.8384
<b>Serial Number</b>	0006346	<b>Technician</b>	Ron Harris
<b>Test Results</b>	<b>Pass</b>	<b>Calibration Date</b>	8 Feb 2021
<b>Initial Condition</b>	As Manufactured	<b>Calibration Due</b>	8 Feb 2022
<b>Description</b>	Sound Expert LxT Class 1 Sound Level Meter Firmware Revision: 2.404	<b>Temperature</b>	23.56 °C ± 0.25 °C
		<b>Humidity</b>	50.9 %RH ± 2.0 %RH
		<b>Static Pressure</b>	85.61 kPa ± 0.13 kPa

**Evaluation Method**      **Tested with:**      **Data reported in dB re 20 µPa.**

Larson Davis PRMLxT1L. S/N 069995  
PCB 377B02. S/N 326425  
Larson Davis CAL200. S/N 9079  
Larson Davis CAL291. S/N 0108

**Compliance Standards**      Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61252:2002	ANSI S1.11 (R2009) Class 1
IEC 61260:2001 Class 1	ANSI S1.25 (R2007)
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.

**Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.**

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Correction data from Larson Davis LxT Manual for SoundTrack LxT & SoundExpert Lxt, I770.01 Rev J Supporting Firmware Version 2.301, 2015-04-30

LARSON DAVIS - A PCB PIEZOTRONICS DIV.  
1681 West 820 North  
Provo, UT 84601, United States  
716-684-0001



**Certificate Number 2021001443**

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to 1/2" adaptor is used with the preamplifier.

Calibration Check Frequency: 1000 Hz; Reference Sound Pressure Level: 114 dB re 20 µPa

Periodic tests were performed in accordance with procedures from IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part3.

No Pattern approval for IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 available.

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the sound level meter to the full specifications of IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1 or correction data for acoustical test of frequency weighting were not provided in the Instruction Manual and (b) because the periodic tests of IEC 61672-3:2013 / ANSI/ASA S1.4-2014/Part 3 cover only a limited subset of the specifications in IEC 61672-1:2013 / ANSI/ASA S1.4-2014/Part 1.

Standards Used			
Description	Cal Date	Cal Due	Cal Standard
Larson Davis CAL291 Residual Intensity Calibrator	2020-09-18	2021-09-18	001250
Hart Scientific 2626-S Humidity/Temperature Sensor	2020-05-12	2021-05-12	006943
Larson Davis CAL200 Acoustic Calibrator	2020-07-21	2021-07-21	007027
Larson Davis Model 831	2020-03-02	2021-03-02	007182
PCB 377A13 1/2 inch Prepolarized Pressure Microphone	2020-03-05	2021-03-05	007185
SRS DS360 Ultra Low Distortion Generator	2020-04-14	2021-04-14	007635
Larson Davis 1/2" Preamplifier for Model 831 Type 1	2020-10-06	2021-10-06	PCB0004783

**Acoustic Calibration**

Measured according to IEC 61672-3:2013 10 and ANSI S1.4-2014 Part 3: 10

Measurement	Test Result [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
1000 Hz	114.00	113.80	114.20	0.14	Pass

**Loaded Circuit Sensitivity**

Measurement	Test Result [dB re 1 V / Pa]	Lower Limit [dB re 1 V / Pa]	Upper Limit [dB re 1 V / Pa]	Expanded Uncertainty [dB]	Result
1000 Hz	-28.17	-29.61	-26.24	0.14	Pass

-- End of measurement results--



### Acoustic Signal Tests, C-weighting

Measured according to IEC 61672-3:2013 12 and ANSI S1.4-2014 Part 3: 12 using a comparison coupler with Unit Under Test (UUT) and reference SLM using slow time-weighted sound level for compliance to IEC 61672-1:2013 5.5; ANSI S1.4-2014 Part 1: 5.5

Frequency [Hz]	Test Result [dB]	Expected [dB]	Lower Limit [dB]	Upper Limit [dB]	Expanded Uncertainty [dB]	Result
125	-0.18	-0.20	-1.20	0.80	0.23	Pass
1000	0.13	0.00	-0.70	0.70	0.23	Pass
8000	-2.84	-3.00	-5.50	-1.50	0.32	Pass

-- End of measurement results--

### Self-generated Noise

Measured according to IEC 61672-3:2013 11.1 and ANSI S1.4-2014 Part 3: 11.1

Measurement	Test Result [dB]
A-weighted	40.19

-- End of measurement results--

-- End of Report--

Signatory: Ron Harris





## CERTIFICATE OF CALIBRATION

Certificate No.: 20CA1119 02-03

Page: 1 of 2

### Item tested

Description: Acoustical Calibrator (Class 1)  
Manufacturer: Larson Davis  
Type/Model No.: CAL200  
Serial/Equipment No.: 13098  
Adaptors used: -

### Item submitted by

Customer: Lam Environmental Services Limited.  
Address of Customer: -  
Request No.: -  
Date of receipt: 19-Nov-2020

Date of test: 20-Nov-2020

### Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	11-May-2021	SCL
Preamplifier	B&K 2673	2743150	03-Jun-2021	CEPREI
Measuring amplifier	B&K 2610	2346941	03-Jun-2021	CEPREI
Signal generator	DS 360	33873	19-May-2021	CEPREI
Digital multi-meter	34401A	US36087050	19-May-2021	CEPREI
Audio analyzer	8903B	GB41300350	18-May-2021	CEPREI
Universal counter	53132A	MY40003662	18-May-2021	CEPREI

### Ambient conditions

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

### Test specifications

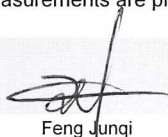
- 1, The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- 2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
-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

### Test results

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

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

Approved Signatory:

  
Feng Junqi

Date: 21-Nov-2020

Company Chop:



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



## CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 20CA1119 02-03

Page: 2 of 2

## 1, Measured Sound Pressure Level

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

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	(Output level in dB re 20 $\mu$ Pa)
			Estimated Expanded Uncertainty dB
1000	94.00	93.75	0.10

## 2, Sound Pressure Level Stability - Short Term Fluctuations

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

At 1000 Hz STF = 0.006 dB

Estimated expanded uncertainty 0.005 dB

## 3, Actual Output Frequency

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

At 1000 Hz Actual Frequency = 999.87 Hz

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

## 4, Total Noise and Distortion

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

At 1000 Hz TND = 0.5%

Estimated expanded uncertainty 0.7 %

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

- End -

Calibrated by:

Date:

Fung Chi Yip

20-Nov-2020

Checked by:

Date:

Feng Junqi

21-Nov-2020

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



## Appendix D

### *Wind Data*



**Wind Speed and Wind Direction**

Date	Time	Wind Speed (m/s)	Wind Direction (degree)
12-Aug-21	11:00	0.7	70(ENE)
	12:00	0.9	232(SW)
	13:00	0.5	317(NW)
	14:00	0.6	307(NW)
	15:00	0.5	283(WNW)
	16:00	0.7	234(SW)
	17:00	0.7	277(W)
	18:00	0.9	284(WNW)
	19:00	0.9	221(SW)
	20:00	0.5	293(WNW)
	21:00	0.7	263(W)
	22:00	0.5	286(WNW)
	23:00	0.0	158(SSE)
13-Aug-21	0:00	1.3	43(NE)
	1:00	0.7	251(WSW)
	2:00	0.7	313(NW)
	3:00	0.5	221(SW)
	4:00	0.7	20(NNE)
	5:00	0.5	200(SSW)
	6:00	1.3	260(W)
	7:00	1.1	168(SSE)
	8:00	0.9	173(S)
	9:00	1.5	225(SW)
	10:00	2.9	149(SSE)
	11:00	0.7	10(N)
	12:00	0.7	297(WNW)
	13:00	0.9	314(NW)
	14:00	1.5	110(ESE)
	15:00	2.1	265(W)
	16:00	0.7	52(NE)
	17:00	2.3	39(NE)
	18:00	1.3	331(NNW)
	19:00	1.3	319(NW)
	20:00	0.9	333(NNW)
	21:00	0.7	307(NW)
	22:00	0.9	244(WSW)
23:00	0.7	129(SE)	





## Wind Speed and Wind Direction

Date	Time	Wind Speed (m/s)	Wind Direction (degree)
14-Aug-21	0:00	0.7	50(NE)
	1:00	1.1	303(WNW)
	2:00	1.9	70(ENE)
	3:00	1.7	73(ENE)
	4:00	1.1	111(ESE)
	5:00	1.7	55(NE)
	6:00	1.3	119(ESE)
	7:00	0.0	239(WSW)
	8:00	1.3	191(S)
	9:00	0.5	346(NNW)
	10:00	0.9	273(W)
	11:00	0.9	72(ENE)
	12:00	1.3	244(WSW)
	13:00	1.1	25(NNE)
	14:00	1.1	47(NE)
	15:00	1.5	111(ESE)
	16:00	1.3	97(E)
	17:00	1.5	127(SE)
	18:00	0.7	148(SSE)
	19:00	0.5	161(SSE)
	20:00	1.1	143(SE)
	21:00	0.9	92(E)
	22:00	0.7	78(ENE)
23:00	0.7	278(W)	
15-Aug-21	0:00	0.9	130(SE)
	1:00	0.5	315(NW)
	2:00	0.0	300(WNW)
	3:00	0.9	297(WNW)
	4:00	0.9	271(W)
	5:00	0.5	321(NW)
	6:00	0.0	310(NW)
	7:00	0.5	243(WSW)
	8:00	1.1	178(S)
	9:00	0.0	160(SSE)
	10:00	1.1	30(NNE)
	11:00	0.7	77(ENE)
	12:00	1.7	353(N)
	13:00	0.9	319(NW)
	14:00	0.9	39(NE)
	15:00	0.7	350(N)
	16:00	1.1	264(W)
	17:00	1.3	54(NE)
	18:00	1.1	103(ESE)
	19:00	0.9	298(WNW)
	20:00	0.0	290(WNW)
	21:00	0.5	39(NE)
	22:00	0.0	229(SW)
23:00	0.0	317(NW)	



## Wind Speed and Wind Direction

Date	Time	Wind Speed (m/s)	Wind Direction (degree)
16-Aug-21	0:00	0.9	123(ESE)
	1:00	0.5	191(S)
	2:00	1.1	113(ESE)
	3:00	0.0	98(E)
	4:00	0.0	134(SE)
	5:00	0.9	72(ENE)
	6:00	0.0	327(NNW)
	7:00	0.0	301(WNW)
	8:00	0.9	274(W)
	9:00	0.9	8(N)
	10:00	1.5	196(SSW)
	11:00	1.7	314(NW)
	12:00	2.1	263(W)
	13:00	2.5	60(ENE)
	14:00	1.3	313(NW)
	15:00	0.0	0(N)
	16:00	2.1	167(SSE)
	17:00	1.9	124(SE)
	18:00	0.7	153(SSE)
	19:00	0.7	86(E)
	20:00	1.3	38(NE)
	21:00	1.1	324(NW)
	22:00	0.9	133(SE)
23:00	0.5	128(SE)	
17-Aug-21	0:00	0.5	99(E)
	1:00	0.7	132(SE)
	2:00	0.7	241(WSW)
	3:00	0.7	285(WNW)
	4:00	0.7	284(WNW)
	5:00	0.7	119(ESE)
	6:00	0.7	120(ESE)
	7:00	1.1	137(SE)
	8:00	0.9	82(E)
	9:00	1.1	24(NNE)
	10:00	1.9	173(S)
	11:00	1.7	127(SE)
	12:00	0.9	20(NNE)
	13:00	1.5	162(SSE)
	14:00	1.7	170(S)
	15:00	1.5	251(WSW)
	16:00	1.9	226(SW)
	17:00	2.1	68(ENE)
	18:00	1.1	144(SE)
	19:00	1.5	186(S)
	20:00	2.7	246(WSW)
	21:00	0.9	194(SSW)
	22:00	0.9	114(ESE)
23:00	1.1	163(SSE)	



## Wind Speed and Wind Direction

Date	Time	Wind Speed (m/s)	Wind Direction (degree)
18-Aug-21	0:00	1.1	132(SE)
	1:00	0.7	24(NNE)
	2:00	0.5	175(S)
	3:00	1.3	16(NNE)
	4:00	0.7	72(ENE)
	5:00	0.9	145(SE)
	6:00	0.9	122(ESE)
	7:00	0.9	113(ESE)
	8:00	0.9	50(NE)
	9:00	1.7	137(SE)
	10:00	1.3	150(SSE)
	11:00	0.9	184(S)
	12:00	1.1	258(WSW)
	13:00	1.3	101(E)
	14:00	1.3	258(WSW)
	15:00	1.3	114(ESE)
	16:00	1.1	148(SSE)
	17:00	0.9	262(W)
	18:00	0.5	27(NNE)
	19:00	0.5	173(S)
	20:00	0.5	127(SE)
	21:00	0.5	67(ENE)
	22:00	0.9	60(ENE)
23:00	1.1	205(SSW)	
19-Aug-21	0:00	0.7	115(ESE)
	1:00	0.7	334(NNW)
	2:00	0.7	352(N)
	3:00	0.0	51(NE)
	4:00	0.5	127(SE)
	5:00	0.7	262(W)
	6:00	0.5	308(NW)
	7:00	0.7	291(WNW)
	8:00	1.1	124(SE)
	9:00	1.1	29(NNE)
	10:00	2.5	137(SE)
	11:00	0.9	107(ESE)
	12:00	0.9	153(SSE)
	13:00	1.1	168(SSE)
	14:00	1.3	169(S)
	15:00	1.1	180(S)
	16:00	1.9	104(ESE)
	17:00	1.3	201(SSW)
	18:00	1.3	250(WSW)
	19:00	0.7	59(ENE)
	20:00	1.1	311(NW)
	21:00	0.9	69(ENE)
	22:00	0.9	205(SSW)
23:00	1.3	234(SW)	



## Wind Speed and Wind Direction

Date	Time	Wind Speed (m/s)	Wind Direction (degree)
20-Aug-21	0:00	0.9	66(ENE)
	1:00	1.7	79(E)
	2:00	0.5	70(ENE)
	3:00	0.9	238(WSW)
	4:00	0.7	276(W)
	5:00	0.7	354(N)
	6:00	0.7	174(S)
	7:00	1.3	124(SE)
	8:00	1.7	120(ESE)
	9:00	1.1	258(WSW)
	10:00	1.5	107(ESE)
	11:00	1.5	113(ESE)
	12:00	2.5	167(SSE)
	13:00	1.7	132(SE)
	14:00	2.1	237(WSW)
	15:00	1.5	223(SW)
	16:00	1.9	51(NE)
	17:00	3.1	101(E)
	18:00	1.1	94(E)
	19:00	1.9	240(WSW)
	20:00	0.7	186(S)
	21:00	1.3	57(ENE)
	22:00	1.1	113(ESE)
23:00	0.5	121(ESE)	
21-Aug-21	0:00	0.9	134(SE)
	1:00	0.9	99(E)
	2:00	1.1	88(E)
	3:00	0.0	124(SE)
	4:00	2.1	129(SE)
	5:00	1.1	125(SE)
	6:00	0.0	66(ENE)
	7:00	1.1	98(E)
	8:00	0.9	120(ESE)
	9:00	0.9	293(WNW)
	10:00	1.3	96(E)
	11:00	0.9	70(ENE)
	12:00	1.3	51(NE)
	13:00	2.5	189(S)
	14:00	5.5	70(ENE)
	15:00	1.9	228(SW)
	16:00	2.1	133(SE)
	17:01	1.3	104(ESE)
	18:01	2.5	100(E)
	19:01	1.5	116(ESE)
	20:01	0.5	289(WNW)
	21:01	0.9	241(WSW)
	22:01	1.5	277(W)
23:01	0.7	151(SSE)	



## Wind Speed and Wind Direction

Date	Time	Wind Speed (m/s)	Wind Direction (degree)
22-Aug-21	0:01	0.9	108(ESE)
	1:01	1.3	84(E)
	2:01	1.7	51(NE)
	3:01	0.5	90(E)
	4:01	0.9	302(WNW)
	5:01	0.7	116(ESE)
	6:01	0.5	66(ENE)
	7:01	1.5	136(SE)
	8:01	0.7	283(WNW)
	9:01	1.9	153(SSE)
	10:01	1.3	225(SW)
	11:01	1.1	121(ESE)
	12:01	1.9	114(ESE)
	13:01	1.3	115(ESE)
	14:01	2.1	145(SE)
	15:01	2.5	202(SSW)
	16:01	3.1	51(NE)
	17:01	1.1	161(SSE)
	18:01	2.1	60(ENE)
	19:01	0.5	73(ENE)
	20:01	1.1	137(SE)
	21:01	1.1	231(SW)
	22:01	1.3	34(NE)
23:01	0.7	122(ESE)	
23-Aug-21	0:01	0.7	157(SSE)
	1:01	0.9	340(NNW)
	2:01	0.9	151(SSE)
	3:01	0.7	145(SE)
	4:01	1.3	155(SSE)
	5:01	1.1	142(SE)
	6:01	1.1	187(S)
	7:01	0.9	233(SW)
	8:01	2.1	181(S)
	9:01	0.7	224(SW)
	10:01	0.7	218(SW)
	11:01	0.9	127(SE)
	12:01	1.5	106(ESE)
	13:01	1.5	172(S)
	14:01	1.5	130(SE)
	15:01	2.9	182(S)
	16:01	2.7	114(ESE)
	17:01	0.9	100(E)
	18:01	1.1	27(NNE)
	19:01	1.7	95(E)
	20:01	1.3	242(WSW)
	21:01	0.9	154(SSE)
	22:01	0.7	340(NNW)
23:01	1.5	84(E)	



Wind Speed and Wind Direction

Date	Time	Wind Speed (m/s)	Wind Direction (degree)
24-Aug-21	0:01	1.3	195(SSW)
	1:01	0.9	229(SW)
	2:01	1.5	338(NNW)
	3:01	1.1	41(NE)
	4:01	0.7	84(E)
	5:01	1.1	214(SW)
	6:01	1.3	126(SE)
	7:01	0.7	230(SW)
	8:01	1.1	78(ENE)
	9:01	1.7	98(E)
	10:01	0.7	25(NNE)
	11:01	1.9	70(ENE)
	12:01	1.5	234(SW)
	13:01	2.5	101(E)
	14:01	1.9	233(SW)
	15:01	1.5	255(WSW)
	16:01	2.5	51(NE)
	17:01	0.7	104(ESE)
	18:01	1.1	169(S)
	19:01	0.9	272(W)
	20:01	0.7	231(SW)
	21:01	1.5	307(NW)
	22:01	0.9	47(NE)
23:01	0.7	319(NW)	
25-Aug-21	0:01	0.9	122(ESE)
	1:01	0.7	111(ESE)
	2:01	0.7	310(NW)
	3:01	0.9	131(SE)
	4:01	0.5	18(NNE)
	5:01	0.5	266(W)
	6:01	0.7	267(W)
	7:01	0.5	65(ENE)
	8:01	1.7	222(SW)
	9:01	0.7	13(NNE)
	10:01	1.1	204(SSW)
	11:01	1.3	186(S)
	12:01	1.3	238(WSW)
	13:01	2.3	189(S)
	14:01	1.3	144(SE)
	15:01	1.3	276(W)
	16:01	0.9	200(SSW)
	17:01	0.7	284(WNW)
	18:01	1.3	188(S)
	19:01	0.9	108(ESE)
	20:01	0.7	294(WNW)
	21:01	0.9	141(SE)
	22:01	0.0	6(N)
23:01	0.5	295(WNW)	



**Wind Speed and Wind Direction**

<b>Date</b>	<b>Time</b>	<b>Wind Speed (m/s)</b>	<b>Wind Direction (degree)</b>
26-Aug-21	0:01	0.7	90(E)
	1:01	0.9	27(NNE)
	2:01	0.7	264(W)
	3:01	0.0	111(ESE)
	4:01	0.7	118(ESE)
	5:01	0.7	339(NNW)
	6:01	0.5	165(SSE)
	7:01	0.7	199(SSW)
	8:01	0.7	132(SE)
	9:01	0.7	46(NE)
10:01	1.1	190(S)	



## Appendix E

### *Baseline Air Quality Monitoring Data*





24hr TSP Monitoring Results at AMC01 - Lai King Catholic Secondary School

Equipment No. HVS004

Date	Sampling Time	Weather Condition	Filter paper no.	Filter Weight, g		Elapse Time, hr		Sampling Time, hr	Flow Rate, m <sup>3</sup> /min			Total Volume, m <sup>3</sup>	TSP Level, µg/m <sup>3</sup>
				Initial	Final	Initial	Final		Initial, Qsi	Final, Qsf	Average		
12-Aug-21	15:26	Cloudy	8357	2.6667	2.7125	30465.36	30489.36	24.00	1.33	1.33	1.33	1911	24.0
13-Aug-21	15:28	Rainy	8354	2.6601	2.7138	30489.36	30513.36	24.00	1.33	1.33	1.33	1911	28.1
14-Aug-21	15:30	Cloudy	8347	2.6117	2.6517	30513.36	30537.36	24.00	1.33	1.33	1.33	1914	20.9
15-Aug-21	15:32	Rainy	8348	2.6259	2.6701	30537.36	30561.36	24.00	1.33	1.33	1.33	1915	23.1
16-Aug-21	15:34	Cloudy	8349	2.6321	2.6916	30561.36	30585.36	24.00	1.33	1.33	1.33	1913	31.1
17-Aug-21	15:36	Fine	8350	2.6491	2.7001	30585.36	30609.36	24.00	1.33	1.33	1.33	1911	26.7
18-Aug-21	15:38	Fine	8901	2.8003	2.8495	30609.36	30633.36	24.00	1.33	1.33	1.33	1911	25.7
19-Aug-21	15:40	Rainy	8908	2.7996	2.8535	30633.36	30657.36	24.00	1.33	1.33	1.33	1911	28.2
20-Aug-21	15:42	Fine	8351	2.6412	2.6917	30657.36	30681.36	24.00	1.33	1.33	1.33	1910	26.4
21-Aug-21	15:44	Fine	8352	2.6578	2.6891	30681.36	30705.36	24.00	1.33	1.33	1.33	1909	16.4
22-Aug-21	15:46	Fine	8353	2.6788	2.7209	30705.36	30729.36	24.00	1.33	1.32	1.33	1908	22.1
23-Aug-21	15:48	Fine	8326	2.6547	2.6840	30729.36	30753.36	24.00	1.32	1.33	1.33	1909	15.4
24-Aug-21	15:50	Rainy	8325	2.6528	2.6855	30753.36	30777.36	24.00	1.33	1.33	1.33	1910	17.1
25-Aug-21	16:00	Fine	8920	2.8084	2.8349	30777.36	30801.36	24.00	1.33	1.33	1.33	1911	13.9
Average												22.8	
Max												31.1	
Min												13.9	
Action Level												144.8	
Limit Level												260.0	



24hr TSP Monitoring Results at AMC02 - Fung King House

Equipment No. HVS015

Date	Sampling Time	Weather Condition	Filter paper no.	Filter Weight, g		Elapse Time, hr		Sampling Time, hr	Flow Rate, m <sup>3</sup> /min			Total Volume, m <sup>3</sup>	TSP Level, µg/m <sup>3</sup>
				Initial	Final	Initial	Final		Initial, Qsi	Final, Qsf	Average		
12-Aug-21	11:30	Cloudy	8358	2.6717	2.7305	9141.54	9165.54	24.00	1.48	1.48	1.48	2132	27.6
13-Aug-21	11:32	Rainy	8346	2.6308	2.6884	9165.54	9189.54	24.00	1.44	1.45	1.45	2082	27.7
14-Aug-21	11:34	Cloudy	8328	2.6639	2.7018	9189.54	9213.54	24.00	1.48	1.49	1.48	2137	17.7
15-Aug-21	11:36	Rainy	8329	2.6813	2.7291	9213.54	9237.54	24.00	1.49	1.49	1.49	2140	22.3
16-Aug-21	11:38	Cloudy	8330	2.6564	2.7033	9237.54	9261.54	24.00	1.49	1.48	1.48	2136	22.0
17-Aug-21	11:40	Fine	8331	2.6735	2.7046	9261.54	9285.54	24.00	1.48	1.48	1.48	2131	14.6
18-Aug-21	11:45	Fine	8902	2.8182	2.8604	9285.54	9309.54	24.00	1.48	1.48	1.48	2132	19.8
19-Aug-21	12:09	Rainy	8909	2.8044	2.8486	9309.54	9333.54	24.00	1.48	1.48	1.48	2132	20.7
20-Aug-21	12:15	Fine	8316	2.6818	2.7241	9333.54	9357.54	24.00	1.48	1.48	1.48	2130	19.9
21-Aug-21	12:17	Fine	8317	2.6684	2.7134	9357.54	9381.54	24.00	1.48	1.48	1.48	2128	21.1
22-Aug-21	12:19	Fine	8318	2.6811	2.7203	9381.54	9405.54	24.00	1.48	1.48	1.48	2126	18.4
23-Aug-21	12:28	Fine	8319	2.6592	2.7045	9405.54	9429.54	24.00	1.48	1.48	1.48	2127	21.3
24-Aug-21	12:30	Rainy	8320	2.6630	2.6953	9429.54	9453.54	24.00	1.48	1.48	1.48	2129	15.2
25-Aug-21	12:40	Fine	8921	2.7276	2.8129	9453.54	9477.54	24.00	1.48	1.48	1.48	2131	40.0
Average												22.0	
Max												40.0	
Min												14.6	
Action Level												144.3	
Limit Level												260.0	



24hr TSP Monitoring Results at AMC03A - HKEAA- Lai King Assessment Centre

Equipment No. HVS014

Date	Sampling Time	Weather Condition	Filter paper no.	Filter Weight, g		Elapse Time, hr		Sampling Time, hr	Flow Rate, m <sup>3</sup> /min			Total Volume, m <sup>3</sup>	TSP Level, µg/m <sup>3</sup>
				Initial	Final	Initial	Final		Initial, Qsi	Final, Qsf	Average		
12-Aug-21	11:33	Cloudy	8355	2.6764	2.7228	9066.31	9090.31	24.00	1.02	1.02	1.02	1467	31.6
13-Aug-21	11:35	Rainy	8332	2.6600	2.6903	9090.31	9114.31	24.00	1.02	1.02	1.02	1467	20.7
14-Aug-21	11:37	Cloudy	8333	2.6653	2.6858	9114.31	9138.31	24.00	1.02	1.02	1.02	1471	13.9
15-Aug-21	11:39	Rainy	8334	2.6552	2.6886	9138.31	9162.31	24.00	1.02	1.02	1.02	1473	22.7
16-Aug-21	11:41	Cloudy	8335	2.6782	2.7199	9162.31	9186.31	24.00	1.02	1.02	1.02	1470	28.4
17-Aug-21	11:43	Fine	8336	2.6663	2.6970	9186.31	9210.31	24.00	1.02	1.02	1.02	1466	20.9
18-Aug-21	11:45	Fine	8903	2.8138	2.8495	9210.31	9234.31	24.00	1.02	1.02	1.02	1467	24.3
19-Aug-21	12:09	Rainy	8910	2.8069	2.8460	9234.31	9258.31	24.00	1.02	1.02	1.02	1467	26.6
20-Aug-21	12:15	Fine	8337	2.6664	2.7052	9258.31	9282.31	24.00	1.02	1.02	1.02	1466	26.5
21-Aug-21	12:17	Fine	8338	2.6730	2.7008	9282.31	9306.31	24.00	1.02	1.02	1.02	1464	19.0
22-Aug-21	12:20	Fine	8340	2.6753	2.7166	9306.31	9330.31	24.00	1.02	1.02	1.02	1463	28.2
23-Aug-21	12:22	Fine	8339	2.6702	2.6978	9330.31	9354.31	24.00	1.08	1.08	1.08	1558	17.7
24-Aug-21	16:30	Rainy	8341	2.6608	2.6783	9354.31	9378.31	24.00	1.08	1.08	1.08	1560	11.2
25-Aug-21	16:35	Fine	8919	2.7977	2.8030	9378.31	9402.31	24.00	1.08	1.08	1.08	1561	3.4
												Average	21.1
												Max	31.6
												Min	3.4
												Action Level	143.7
												Limit Level	260.0



1hr TSP Monitoring Results at AMC01 - Lai King Catholic Secondary School

Day	Date	Weather	Time	Mass Conc. (ug/m <sup>3</sup> )
1	12-Aug-21	Cloudy	11:34	19.8
			12:35	13.4
			13:36	13.9
2	13-Aug-21	Rainy	11:24	15.3
			12:25	10.1
			13:26	11.7
3	14-Aug-21	Cloudy	11:49	8.0
			12:50	7.9
			13:51	8.0
4	15-Aug-21	Rainy	11:47	6.9
			12:48	5.8
			13:49	4.4
5	16-Aug-21	Cloudy	11:52	16.7
			12:53	10.4
			13:54	7.4
6	17-Aug-21	Fine	11:49	10.3
			12:50	9.8
			13:51	9.3
7	18-Aug-21	Fine	11:56	9.8
			12:57	9.2
			13:58	8.3
8	19-Aug-21	Rainy	12:21	7.0
			13:22	7.9
			14:23	7.7
9	20-Aug-21	Fine	11:39	5.5
			12:40	11.7
			13:41	7.6
10	21-Aug-21	Fine	11:45	11.4
			12:46	7.7
			13:47	8.0
11	22-Aug-21	Fine	12:31	6.0
			13:32	6.3
			14:33	7.8
12	23-Aug-21	Fine	12:20	11.2
			13:21	8.0
			14:22	8.0
13	24-Aug-21	Rainy	12:20	10.6
			13:21	8.8
			14:22	7.0
14	25-Aug-21	Fine	13:02	9.2
			14:03	8.8
			15:04	17.6
Average				9.5
Max				19.8
Min				4.4
Action Level				256.2
Limit Level				500.0

1hr TSP Monitoring Results at AMC02 - Fung King House

Day	Date	Weather	Time	Mass Conc. (ug/m <sup>3</sup> )
1	12-Aug-21	Cloudy	12:33	17.0
			13:34	14.1
			14:35	12.7
2	13-Aug-21	Rainy	11:59	3.5
			13:00	7.4
			14:01	8.8
3	14-Aug-21	Cloudy	11:18	23.0
			12:19	16.8
			13:20	14.5
4	15-Aug-21	Rainy	11:23	14.4
			12:24	8.1
			13:25	12.2
5	16-Aug-21	Cloudy	11:23	15.7
			12:24	13.8
			13:25	9.3
6	17-Aug-21	Fine	11:27	14.4
			12:28	12.0
			13:29	11.1
7	18-Aug-21	Fine	11:14	11.8
			12:15	8.9
			13:16	8.3
8	19-Aug-21	Rainy	11:47	9.3
			12:48	12.8
			13:49	13.9
9	20-Aug-21	Fine	11:27	8.5
			12:28	7.0
			13:29	6.2
10	21-Aug-21	Fine	11:29	10.7
			12:30	7.0
			13:31	6.8
11	22-Aug-21	Fine	11:39	8.5
			12:40	7.2
			13:41	7.2
12	23-Aug-21	Fine	11:58	8.4
			12:59	7.1
			14:00	6.7
13	24-Aug-21	Rainy	11:59	9.0
			13:00	8.3
			14:01	7.7
14	25-Aug-21	Fine	12:30	7.1
			13:31	6.7
			14:32	10.0
Average				10.3
Max				23.0
Min				3.5
Action Level				256.7
Limit Level				500.0

1hr TSP Monitoring Results at AMC03A - Ming King House

Day	Date	Weather	Time	Mass Conc. (ug/m <sup>3</sup> )
1	14:45	Cloudy	14:45	19.9
			15:46	9.6
			16:47	11.8
2	13-Aug-21	Rainy	11:16	22.0
			12:17	12.6
			13:18	12.1
3	14-Aug-21	Cloudy	11:14	18.4
			12:15	19.2
			13:16	18.0
4	15-Aug-21	Rainy	11:19	20.2
			12:20	12.1
			13:21	14.5
5	16-Aug-21	Cloudy	11:19	17.0
			12:20	18.5
			13:21	13.7
6	17-Aug-21	Fine	11:22	19.1
			12:23	14.7
			13:24	13.6
7	18-Aug-21	Fine	11:37	12.9
			12:38	11.7
			13:39	11.6
8	19-Aug-21	Rainy	11:54	14.0
			12:55	14.6
			13:56	17.5
9	20-Aug-21	Fine	11:20	11.2
			12:21	8.5
			13:22	9.4
10	21-Aug-21	Fine	11:27	30.6
			12:28	12.7
			13:29	11.3
11	22-Aug-21	Fine	11:42	15.5
			12:43	13.5
			13:44	14.5
12	23-Aug-21	Fine	11:58	11.8
			12:59	11.7
			14:00	9.7
13	24-Aug-21	Rainy	12:01	14.9
			13:02	13.2
			14:03	16.1
14	25-Aug-21	Fine	12:24	8.9
			13:25	8.0
			14:26	10.6
Average				14.3
Max				30.6
Min				8.0
Action Level				259.3
Limit Level				500.0



## **Appendix F**

### ***Baseline Noise Monitoring Data***



Monitoring Station	Time Period	Parameter	Average	Max	Min
NMC01	From 0700-1900 hrs on normal weekdays	$L_{eq, 30min}$	74.5	74.9	73.9
NMC02			67.6	72.0	66.7
NMC03			79.1	80.3	77.0

Monitoring Station	Time Period	Parameter	Average	Max	Min
NMC01	From 0700-2300 hrs on holidays (including Sundays); and 1900-2300 hrs on all days	$L_{eq, 30min}$	73.2	74.6	70.2
NMC02			65.5	71.3	64.1
NMC03			77.5	79.3	75.4

Monitoring Station	Time Period	Parameter	Average	Max	Min
NMC01	From 2300-0700 hrs of all days	$L_{eq, 30min}$	71.9	74.0	69.4
NMC02			64.6	71.5	62.8
NMC03			75.1	77.4	71.8



Location: NMC01 - Lai King Catholic Secondary School

Parameter

Time Period: From 0700-1900 hrs on normal weekdays

Day	Date	Time	L <sub>eq</sub> (5min)	L <sub>10</sub> (5min)	L <sub>90</sub> (5min)	L <sub>eq</sub> (30min)	
1	12-Aug-21	9:15	74.6	75.9	73.1	74.6	
		9:20	74.9	76.2	73.2		
		9:25	74.6	75.9	73.1		
		9:30	74.8	76.1	73.3		
		9:35	74.3	75.6	73.1		
		9:40	74.5	75.8	73.0		
		9:45	74.7	75.7	73.5		
2	13-Aug-21	9:45	74.6	75.6	73.3	74.6	
		9:50	74.5	75.6	73.4		
		9:55	74.5	75.6	73.2		
		10:00	74.6	75.5	73.5		
		10:05	74.4	75.6	73.2		
		15:50	74.9	76.1	73.7		
		15:55	74.9	76.1	73.6		
3	14-Aug-21	16:00	74.7	75.8	73.4	74.9	
		16:05	75.0	76.5	73.4		
		16:10	75.1	76.2	73.8		
		16:15	74.8	75.9	73.5		
		Public Holiday					
		Public Holiday					
5	16-Aug-21	15:20	74.4	75.5	73.2	74.6	
		15:25	74.6	75.9	73.2		
		15:30	74.9	76.3	73.3		
		15:35	74.2	75.4	72.8		
		15:40	75.0	76.5	73.3		
		15:45	74.8	76.0	73.3		
6	17-Aug-21	9:35	74.8	75.9	73.6	74.6	
		9:40	74.7	75.9	73.4		
		9:45	74.6	75.7	73.3		
		9:50	74.3	75.4	73.1		
		9:55	74.8	76.0	73.6		
		10:00	74.6	75.7	73.4		
		10:45	74.5	75.7	73.0		
7	18-Aug-21	10:50	74.5	75.7	73.0	74.4	
		10:55	74.2	75.5	72.4		
		11:00	74.1	75.4	72.6		
		11:05	74.7	75.9	73.1		
		11:10	74.5	75.8	73.0		
		9:15	74.3	75.6	73.0		
8	19-Aug-21	9:20	74.6	75.7	73.5	74.6	
		9:25	74.9	75.8	73.8		
		9:30	74.7	75.7	73.6		
		9:35	74.8	75.8	73.6		
		9:40	74.5	75.5	73.4		
		11:00	74.4	75.7	73.0		
		11:05	74.6	75.6	73.3		
9	20-Aug-21	11:10	74.3	75.3	73.1	74.4	
		11:15	74.7	75.8	73.5		
		11:20	74.3	75.4	73.1		
		11:25	74.2	75.4	72.8		
		14:15	74.3	75.4	73.2		
		14:20	74.2	75.5	72.4		
10	21-Aug-21	14:25	74.8	76.0	73.4	74.3	
		14:30	74.5	75.6	73.0		
		14:35	73.8	75.1	72.4		
		14:40	74.3	75.4	73.0		
		Public Holiday					
		Public Holiday					
12	23-Aug-21	10:00	74.3	75.4	72.9	74.3	
		10:05	74.5	75.7	73.1		
		10:10	74.3	75.9	72.4		
		10:15	74.3	75.5	72.9		
		10:20	74.5	75.5	73.3		
		10:25	74.1	75.2	72.6		
13	24-Aug-21	14:15	73.8	75.2	72.3	73.9	
		14:20	74.0	75.4	72.3		
		14:25	73.8	75.1	72.0		
		14:30	73.8	74.9	72.2		
		14:35	74.1	75.2	72.8		
		14:40	73.9	75.1	72.5		
14	25-Aug-21	13:20	73.9	75.0	72.4	74.1	
		13:25	74.3	75.6	72.5		
		13:30	74.3	75.7	72.6		
		13:35	74.2	75.5	72.5		
		13:40	73.8	75.0	72.4		
		13:45	74.1	75.3	72.7		

\*Additional 3dB(A) shall be made on the result to the free field measurement

Location: NMC02 - Fung King House

Time Period: From 0700-1900 hrs on normal weekdays

Day	Date	Time	L <sub>eq</sub> (5min)	L <sub>10</sub> (5min)	L <sub>90</sub> (5min)	L <sub>eq</sub> (30min)	
1	12-Aug-21	11:05	72.0	72.3	71.7	72.0	
		11:10	72.0	72.4	71.6		
		11:15	71.9	72.3	71.6		
		11:20	72.1	72.4	71.7		
		11:25	72.1	72.4	71.7		
		11:30	72.0	72.3	71.7		
		9:40	69.2	69.6	68.7		
2	13-Aug-21	9:45	69.1	69.6	68.6	69.1	
		9:50	68.8	69.3	68.4		
		9:55	69.3	69.8	68.8		
		10:00	69.2	69.8	68.5		
		10:05	69.0	69.7	68.3		
		15:50	67.3	67.9	66.6		
		15:55	67.4	68.1	66.6		
3	14-Aug-21	16:00	67.8	68.4	67.1	67.5	
		16:05	67.7	68.5	67.0		
		16:10	67.3	68.0	66.6		
		16:15	67.3	68.0	66.6		
		Public Holiday					
		Public Holiday					
5	16-Aug-21	15:20	66.5	67.7	64.7	67.0	
		15:25	67.4	68.2	66.4		
		15:30	67.1	68.0	66.3		
		15:35	67.2	68.0	66.3		
		15:40	67.0	67.9	66.2		
		15:45	67.1	67.9	66.3		
6	17-Aug-21	9:35	67.0	67.8	66.2	67.0	
		9:40	67.2	67.9	66.5		
		9:45	67.3	68.1	66.5		
		9:50	67.1	68.0	66.3		
		9:55	66.6	67.4	65.9		
		10:00	66.6	67.4	65.9		
		10:45	67.0	67.7	66.3		
7	18-Aug-21	10:50	67.2	68.0	66.3	66.9	
		10:55	66.8	67.6	66.1		
		11:00	66.8	67.6	66.1		
		11:05	66.7	67.4	66.0		
		11:10	66.7	67.3	66.1		
		9:15	67.0	67.5	66.4		
8	19-Aug-21	9:20	67.3	67.8	66.7	67.2	
		9:25	67.1	67.6	66.5		
		9:30	67.2	67.8	66.6		
		9:35	67.3	68.0	66.7		
		9:40	67.1	67.6	66.5		
		10:20	67.1	67.8	66.5		
		10:25	67.3	68.0	66.7		
9	20-Aug-21	10:30	67.0	67.7	66.4	67.2	
		10:35	67.4	68.1	66.8		
		10:40	67.3	68.0	66.6		
		10:45	67.2	67.9	66.6		
		14:15	66.8	67.4	66.2		
		14:20	67.0	67.6	66.4		
10	21-Aug-21	14:25	66.6	67.3	65.9	67.0	
		14:30	67.2	67.8	66.5		
		14:35	67.1	67.7	66.5		
		14:40	67.1	67.8	66.4		
		Public Holiday					
		Public Holiday					
12	23-Aug-21	15:15	66.7	67.3	66.1	66.7	
		15:20	66.7	67.3	66.0		
		15:25	66.7	67.3	66.1		
		15:30	66.8	67.4	66.1		
		15:35	66.6	67.2	66.0		
		15:40	66.8	67.3	66.1		
13	24-Aug-21	15:50	67.0	67.9	65.9	67.2	
		15:55	67.1	67.9	66.2		
		16:00	67.1	68.1	66.0		
		16:05	67.1	68.1	66.0		
		16:10	67.3	68.0	66.3		
		16:15	67.3	68.3	66.1		
14	25-Aug-21	10:25	66.6	67.5	65.5	66.7	
		10:30	66.4	67.4	65.3		
		10:35	66.9	67.7	65.9		
		10:40	66.8	67.8	65.5		
		10:45	66.7	67.6	65.5		
		10:50	66.6	67.5	65.6		

\*Additional 3dB(A) shall be made on the result to the free field measurement



Location: NMC03 - HKEEA - Lai King Assessment Centre

Parameter

Time Period: From 0700-1900 hrs on normal weekdays

Day	Date	Time	L <sub>eq</sub> (5min)	L <sub>10</sub> (5min)	L <sub>90</sub> (5min)	L <sub>eq</sub> (30min)
1	12-Aug-21	9:15	79.7	81.1	78.2	79.4
		9:20	79.8	81.0	78.6	
		9:25	79.3	80.9	77.6	
		9:30	79.6	81.2	78.3	
		9:35	79.1	80.2	78.0	
		9:40	78.9	80.5	77.3	
2	13-Aug-21	8:35	77.3	78.2	76.2	77.0
		8:40	76.9	78.0	75.6	
		8:45	76.8	77.8	75.7	
		8:50	76.8	77.9	75.7	
		8:55	76.8	77.7	75.6	
		9:00	77.2	78.3	75.9	
3	14-Aug-21	14:45	79.9	81.0	78.3	79.7
		14:50	80.2	81.2	79.0	
		14:55	79.8	81.0	78.4	
		15:00	79.4	80.3	78.2	
		15:05	79.4	80.5	78.1	
		15:10	79.5	80.6	78.4	
4	15-Aug-21	Public Holiday				
5	16-Aug-21	15:15	79.5	80.6	77.9	79.5
		15:20	79.3	80.6	77.8	
		15:25	79.0	80.0	77.8	
		15:30	79.5	80.5	78.3	
		15:35	79.5	80.8	78.0	
		15:40	80.0	81.2	78.2	
6	17-Aug-21	9:00	79.7	80.6	78.6	79.5
		9:05	79.2	80.1	78.0	
		9:10	79.5	80.3	78.6	
		9:15	79.4	80.3	78.4	
		9:20	79.5	80.4	78.5	
		9:25	79.4	80.4	78.3	
7	18-Aug-21	10:15	78.7	80.1	77.0	79.0
		10:20	79.3	80.2	78.0	
		10:25	79.3	80.2	78.2	
		10:30	79.1	80.2	78.0	
		10:35	79.0	80.3	77.7	
		10:40	78.8	80.1	77.3	
8	19-Aug-21	8:35	81.3	81.9	78.3	80.3
		8:40	80.5	81.4	78.8	
		8:45	79.6	80.6	78.4	
		8:50	79.9	80.7	78.4	
		8:55	80.9	81.5	78.8	
		9:00	79.5	80.4	78.3	
9	20-Aug-21	8:35	79.4	80.2	78.4	79.4
		8:40	79.5	80.5	78.4	
		8:45	79.5	80.5	78.2	
		8:50	79.5	80.5	78.3	
		8:55	79.3	80.3	78.2	
		9:00	79.3	80.2	78.1	
10	21-Aug-21	13:20	78.8	79.6	77.5	78.8
		13:25	78.9	79.8	77.6	
		13:30	78.6	79.6	77.4	
		13:35	78.8	79.9	77.8	
		13:40	78.7	79.8	77.7	
		13:45	79.0	80.0	77.7	
11	22-Aug-21	Public Holiday				
12	23-Aug-21	8:00	78.6	79.5	77.5	78.5
		8:05	78.3	79.6	76.9	
		8:10	78.8	79.9	77.6	
		8:15	78.5	79.5	77.2	
		8:20	78.4	79.3	77.3	
		8:25	78.6	79.7	77.3	
13	24-Aug-21	11:36	79.3	80.4	78.1	79.2
		11:41	79.3	80.1	78.2	
		11:46	78.9	79.9	77.9	
		11:51	79.1	80.2	77.9	
		11:56	79.2	80.2	78.2	
		12:01	79.3	80.4	78.0	
14	25-Aug-21	13:41	78.8	79.8	77.7	78.8
		13:46	78.9	80.0	77.2	
		13:51	78.7	79.7	77.2	
		13:46	78.7	79.8	77.2	
		13:51	78.7	79.9	77.3	
		13:51	79.0	80.2	77.7	

\*Additional 3dB(A) shall be made on the result to the free field measurement







Location: NMC03 - HKEAA - Lal King Assessment Centre

Parameter

Time Period: From 0700-2300 hrs on holidays (including Sundays); and 1900-2300 hrs on all days

Day	Date	Time	L <sub>eq</sub> (dmin)	L <sub>10</sub> (dmin)	L <sub>90</sub> (dmin)	L <sub>eq</sub> (20min)
1	12-Aug-21	19:20	78.7	80.5	76.2	78.8
		19:25	78.4	79.9	77.0	
		19:30	79.0	80.7	77.3	
		19:35	78.6	80.0	77.1	
		19:40	79.3	80.8	77.5	
		19:45	79.0	80.7	77.5	
2	13-Aug-21	19:15	77.2	78.4	75.4	77.4
		19:20	77.3	78.6	75.6	
		19:25	77.4	78.9	75.3	
		19:30	77.7	79.1	76.0	
		19:35	77.4	78.8	75.7	
		19:40	77.4	79.0	75.5	
3	14-Aug-21	19:05	78.8	79.9	77.2	78.4
		19:10	78.3	79.5	76.8	
		19:15	78.3	79.7	76.4	
		19:20	78.6	79.8	76.9	
		19:25	78.5	79.7	76.9	
		19:30	78.1	79.6	76.3	
4	15-Aug-21	10:40	78.6	79.8	77.0	78.6
		10:45	78.5	80.1	76.1	
		10:50	78.8	80.0	77.2	
		10:55	78.6	80.1	76.3	
		11:00	78.8	79.9	77.2	
		11:05	78.3	79.6	76.3	
		19:30	77.8	79.1	76.0	77.7
		19:35	77.7	79.0	75.9	
		19:40	77.6	79.1	74.9	
		19:45	77.4	79.1	75.5	
		19:50	77.7	79.1	75.7	
		19:55	77.6	79.2	75.6	
5	16-Aug-21	19:05	75.9	77.2	74.6	75.7
		19:10	76.2	77.4	74.5	
		19:15	75.7	77.0	73.8	
		19:20	75.7	77.0	74.3	
		19:25	75.4	76.4	73.9	
		19:30	75.5	76.8	73.8	
6	17-Aug-21	19:10	78.4	79.5	77.0	78.4
		19:15	78.5	79.8	76.9	
		19:20	78.8	80.1	77.1	
		19:25	77.8	79.4	76.0	
		19:30	78.2	79.5	76.5	
		19:35	78.4	79.7	76.5	
7	18-Aug-21	19:20	77.8	79.0	76.1	77.9
		19:25	78.2	79.7	76.2	
		19:30	78.2	79.2	76.6	
		19:35	77.9	79.1	76.5	
		19:40	77.8	79.0	76.5	
		19:45	77.6	79.0	75.4	
8	19-Aug-21	19:10	78.3	79.3	77.0	77.9
		19:15	78.2	79.3	76.8	
		19:20	78.2	79.4	76.8	
		19:25	78.2	79.4	76.6	
		19:30	77.3	78.8	75.1	
		19:35	77.1	78.6	74.9	
9	20-Aug-21	19:20	78.3	79.5	76.6	78.1
		19:25	78.2	79.3	76.8	
		19:30	78.3	79.5	76.6	
		19:35	78.0	79.3	76.6	
		19:40	77.7	78.9	76.2	
		19:45	77.8	78.9	76.3	
10	21-Aug-21	19:20	77.4	78.7	78.6	77.6
		19:25	77.7	78.9	79.2	
		19:30	77.6	78.9	78.8	
		19:35	77.3	79.0	78.2	
		19:40	77.9	79.1	79.0	
		19:45	77.4	78.9	78.2	
11	22-Aug-21	10:30	77.2	78.5	75.4	77.3
		10:35	77.6	78.7	75.3	
		10:40	77.4	78.9	75.4	
		10:45	77.2	78.7	75.2	
		10:50	77.0	78.5	74.9	
		10:55	77.6	78.8	75.8	
		19:10	76.5	78.3	74.1	76.6
		19:15	77.0	78.5	75.1	
		19:20	75.9	77.7	73.5	
		19:25	76.7	78.3	74.5	
		19:30	76.9	78.1	74.1	
		19:35	76.5	78.1	74.2	
12	23-Aug-21	21:00	76.5	78.0	74.3	76.9
		21:05	76.3	78.2	73.6	
		21:10	76.6	78.1	74.6	
		21:15	76.8	78.6	73.8	
		21:20	76.9	78.0	74.9	
		21:25	78.2	78.1	74.7	
13	24-Aug-21	21:40	76.6	78.4	74.2	76.7
		21:45	76.9	78.4	75.0	
		21:50	76.5	78.0	74.2	
		21:55	76.8	78.4	74.9	
		22:00	76.8	78.1	75.2	
		22:05	76.7	77.9	75.0	
14	25-Aug-21	21:05	76.3	77.8	73.7	76.7
		21:10	77.2	78.5	75.3	
		21:15	76.4	78.0	74.6	
		21:20	76.8	78.2	75.0	
		21:25	76.7	78.2	74.6	
		21:30	76.5	77.8	74.9	

\*Additional 3dB(A) shall be made on the result to the free field measurement





Location: NMC03 - HKEAA - Lai King Assessment Centre

Parameter

Time Period: From 2300-0700 hrs of all days

Day	Date	Time	L <sub>eq</sub> (5min)	L <sub>10</sub> (5min)	L <sub>90</sub> (5min)	L <sub>eq</sub> (30min)
1	12-Aug-21	23:10	72.5	75.1	69.7	74.2
		23:15	72.9	75.7	69.4	
		23:20	73.4	76.0	70.3	
		23:25	73.3	76.1	69.9	
		23:30	73.5	76.1	70.7	
		23:35	77.4	79.7	74.2	
2	13-Aug-21	23:00	72.8	74.7	70.4	72.2
		23:05	72.2	74.0	69.4	
		23:10	72.0	73.6	69.2	
		23:15	72.5	74.3	69.9	
		23:20	72.0	73.8	69.5	
		23:25	71.8	73.6	68.8	
3	14-Aug-21	23:20	76.6	78.3	74.6	76.7
		23:25	77.4	79.0	75.3	
		23:30	76.8	78.2	74.8	
		23:35	76.5	78.2	74.2	
		23:40	76.0	77.8	73.2	
		23:45	76.6	78.3	74.0	
4	15-Aug-21	23:20	77.0	78.6	74.6	76.5
		23:25	76.4	78.1	73.6	
		23:30	76.5	78.3	73.7	
		23:35	76.6	78.2	74.4	
		23:40	76.6	78.8	73.6	
		23:45	76.1	78.1	73.9	
5	16-Aug-21	23:00	73.2	75.0	70.4	73.2
		23:05	73.7	75.6	70.6	
		23:10	73.8	75.1	71.0	
		23:15	73.0	74.8	70.0	
		23:20	72.8	74.5	70.5	
		23:25	72.6	74.8	69.9	
6	17-Aug-21 to 18-Aug-21	23:45	75.6	77.4	72.6	75.3
		23:50	75.4	77.4	72.4	
		23:55	75.4	77.2	72.7	
		0:00	75.4	77.4	72.4	
		0:05	75.3	77.0	72.8	
		0:10	74.9	76.5	72.3	
7	18-Aug-21	0:20	75.0	77.0	71.8	74.8
		0:25	74.9	77.0	72.0	
		0:30	75.0	76.7	71.5	
		0:35	74.9	76.9	71.7	
		0:40	74.5	76.4	71.6	
		0:45	74.8	76.6	69.8	
8	19-Aug-21	23:15	76.2	77.7	74.1	76.5
		23:20	76.7	78.0	73.5	
		23:25	76.1	78.0	73.4	
		23:30	76.8	77.6	73.2	
		23:35	77.4	77.9	73.2	
		23:40	75.5	77.3	72.8	
9	20-Aug-21	23:10	76.4	78.2	74.3	76.3
		23:15	76.4	77.9	74.0	
		23:20	76.2	77.8	74.1	
		23:25	76.4	78.2	73.9	
		23:30	76.3	78.1	73.9	
		23:35	75.9	77.5	74.0	
10	21-Aug-21	23:05	76.4	77.8	74.5	76.4
		23:10	76.6	78.3	73.5	
		23:15	76.3	77.9	73.4	
		23:20	76.2	77.7	74.1	
		23:25	76.3	77.9	74.3	
		23:30	76.5	78.0	74.3	
11	22-Aug-21	23:23	75.3	77.2	72.8	75.0
		23:28	75.7	77.4	73.0	
		23:33	75.0	76.8	71.9	
		23:38	74.3	76.4	71.6	
		23:43	74.9	76.8	71.9	
		23:48	74.6	76.5	71.5	
12	23-Aug-21	23:20	76.1	77.5	73.5	75.4
		23:25	75.4	77.1	72.8	
		23:30	75.4	77.3	72.9	
		23:35	75.2	77.2	72.2	
		23:40	75.2	77.3	72.2	
		23:45	74.9	77.0	71.5	
13	24-Aug-21	0:40	73.9	76.1	70.4	74.1
		0:45	74.8	76.6	70.7	
		0:50	74.4	76.3	70.8	
		0:55	73.9	76.1	70.7	
		1:00	73.5	75.7	69.4	
		1:05	73.7	75.7	70.5	
14	25-Aug-21	23:25	75.7	77.2	73.4	75.7
		23:30	75.9	77.6	73.5	
		23:35	75.7	77.2	73.6	
		23:40	75.6	77.6	73.0	
		23:45	75.5	77.2	72.9	
		23:50	75.5	77.3	72.9	

\*Additional 3dB(A) shall be made on the result to the free field measurement