Vol. 1 of 5

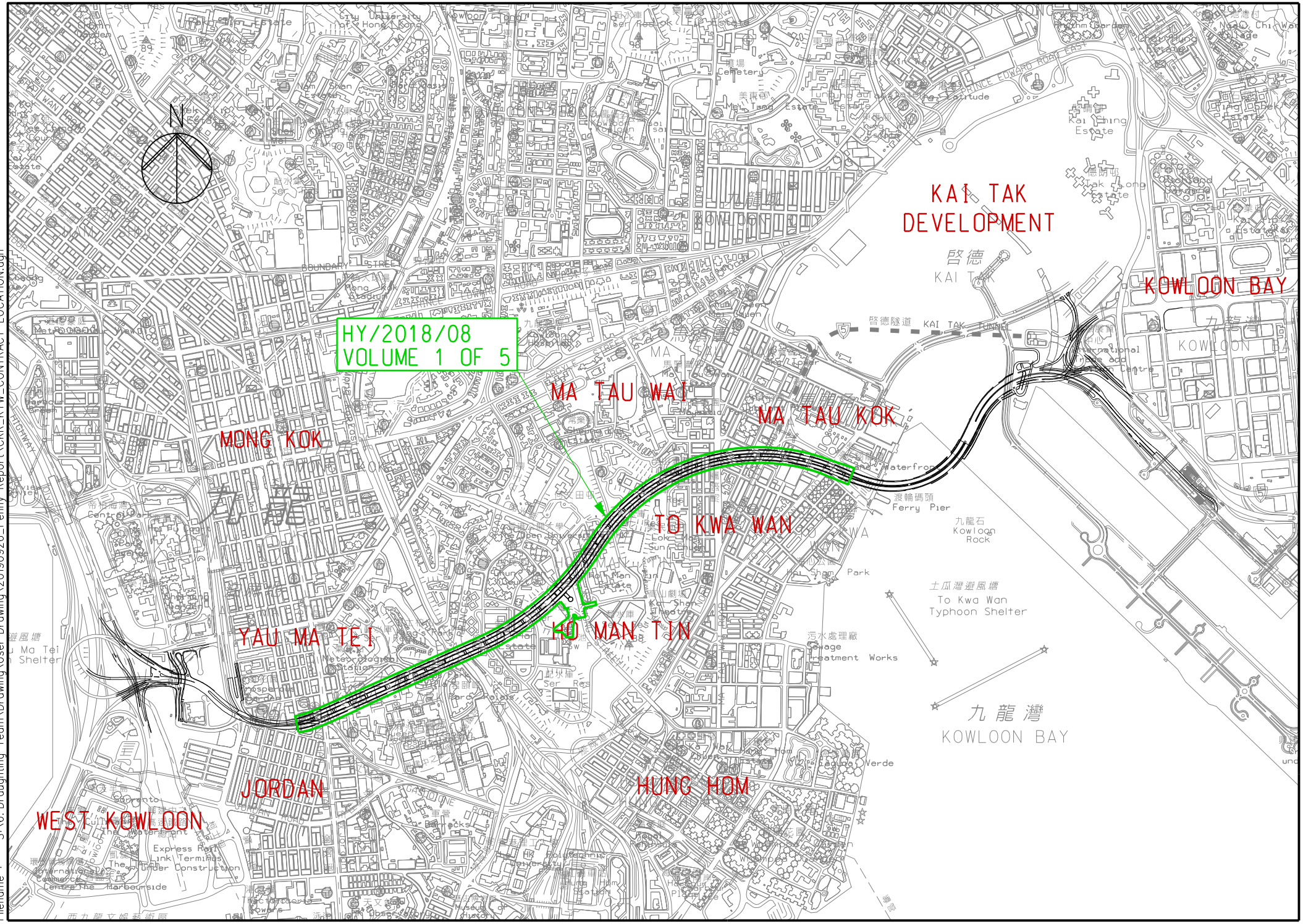
EP-457/2013/C

Central Kowloon Route

Ho Man Tin Access Shaft

Contract No. HY/2014/09

1 to 19 September 2019



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路政署
HIGHWAYS DEPARTMENT
主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE

ERM

Environmental Permit No. EP-457/2013/C

Central Kowloon Route

Independent Environmental Checker Verification

Works Contract:	**Ho Man Tin Access Shaft (HY/2014/09)**

Reference Document/Plan

Document/~~Plan~~ to be ~~Certified~~/ Verified:	Monthly EM&A Report No.20 (September 2019)
Date of Report:	4 October 2019 (Rev. 1)
Date received by IEC:	4 October 2019

Reference EP Condition

Environmental Permit Condition: 3.4

Submission of Monthly EM&A Report of the Project

3.4 Four hard copies and one electronic copy of monthly EM&A Report shall be submitted to the Director within 2 weeks after the end of each reporting month throughout the entire construction period. The EM&A Reports shall include a summary of all non-compliance. The submissions shall be certified by the ET Leader and verified by the IEC as complying with the requirements as set out in the EM&A Manual before submission to the Director. Additional copies of the submission shall be provided to the Director upon request by the Director.

IEC Verification

I hereby verify that the above referenced document/~~plan~~ complies with the above referenced condition of EP-457/2013/C.

Ms Mandy To Date: 8 October 2019

Independent Environmental Checker

Our ref: 0436942_IEC Verification Cert_HMTS_Monthly EM&A Rpt No.20.docx

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Nishimatsu Construction Co. Ltd.

Central Kowloon Route Contract HY/2014/09

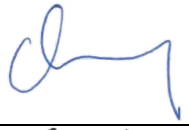
Ho Man Tin Access Shaft

Monthly EM&A Report No. 20

(Period from 1 to 19 September 2019)

Rev. 1

(4 October 2019)

	Name	**Signature**
Prepared by	Karen K. Y. Cheung	
Checked & Reviewed by	Nelson T. H. Tsui	
Approved & Certified by	Kevin W. M. Li (Environmental Team Leader)	

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LIST OF APPENDICES

EXECUTIVE SUMMARY

A.1 NISHIMATSU Construction Company Limited ("Contractor") commenced the construction works of Highway Department (HyD) Central Kowloon Route Contract No. HY/2014/09 - Ho Man Tin Access Shaft ("The Project") on 20 February 2018. This is the 20th monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 September 2019 to 19 September 2019.

A.2 The Project was completed on 19 September 2019 and handed over to HY/2018/08 CKR-Central Tunnel on 20 September 2019. The last monitoring for the Project was conducted on 16 September 2019 and last weekly site inspection was carried out on 17 September 2019. Environmental monitoring and audit for the Project will be continued by the ET of HY/2018/08 CKR-Central Tunnel.

A.3 A summary of the construction works that undertaken for the Project during the reporting month is listed below.

Construction Activities undertaken
• Tree Felling

A.4 A summary of regular construction noise and construction dust monitoring activities in this reporting period is listed below:

Regular construction noise monitoring during normal working hours	
M-N3	3 times
Construction dust (24-hour TSP) monitoring	
M-A3	3 times
Construction dust (1-hour TSP) monitoring	
M-A3	9 times

A.5 No construction work was conducted during time period other than normal working hours during this reporting month.

A.6 Inert construction and demolition (C&D) materials and non-inert C&D materials were the wastes that generated from this Project. During the reporting month, 42 m^3 inert C&D material was generated from the Project. No plastics and no paper/ cardboard packaging were generated and sent to recyclers for recycling during reporting period, respectively. About 15 m^3 of non-recyclable non-inert C&D materials, such as general refuse, were disposed of at landfill, 9 m^3 of yard waste was recycled. No metal and chemical waste were generated during this reporting month.

A.7 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 3, 17 September 2019. Details of the audit findings and implementation status are presented in Section 5.

A.8 Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET on 3, 10, 17 September 2019. Last joint weekly site inspection was conducted on 17 September 2019. The representative of IEC joined the site inspection on 10

September 2019. Details of the audit findings and implementation status are presented in Section 5.

A.9 No change has been made from the described in the approved EM&A, such as construction method, mitigation proposals and design changes.

A.10 No exceedance of the Action and Limit Levels of regular construction noise monitoring was recorded during the reporting period.

A.11 No exceedance of the Action and Limit Levels of 24-hour TSP and 1-hour TSP monitoring were recorded during the reporting period.

A.12 No environmental complaint was received in the reporting period.

A.13 No non-compliance was reported in the reporting month.

A.14 No summon or prosecution was received in this reporting period.

A.15 No reporting changes were revised in this reporting period.

A.16 This is the last monthly EM&A report for the Project.

1. BASIC PROJECT INFORMATION

1.1. Central Kowloon Route (CKR) is a 4.7 km long dual 3-lane trunk road in Central Kowloon linking Yau Ma Tei Interchange in West Kowloon with the road network on Kai Tak Development and Kowloon Bay in East Kowloon.

1.2. The Central Kowloon Route – Design and Construction Environmental Impact Assessment Report (Register No.: AEIAR-171/2013) was approved with conditions by the Environmental Protection Department (EPD) on 11 July 2013. An Environmental Permit (EP 457/2013) was issued on 9 August 2013. Variations of EP (VEP) was subsequently applied for and the latest EP (EP-457/2013/C) was issued by EPD on 16 January 2017.

1.3. The Project was completed on 19 September 2019 and handed over to HY/2018/08 CKR-Central Tunnel on 20 September 2019.

1.4. The construction of the CKR had been divided into different sections. This Contract No. HY/2014/09 - Ho Man Tin Access Shaft (HMTS) ("The Project") covers part of the construction activities located at Ho Man Tin under the EP which includes:

- Central Portion
  i. Decant of Housing Authority Mock Up Centre and Site Establishment
  ii. Diaphragm Walls Construction
  iii. Excavation of Vertical Access Shaft approximately 100m deep and 21m internal diameter

The alignment and works area for the Contract No. HY/2014/09 - are shown in Appendix A.

1.5. A summary of the major construction activities undertaken in this reporting period is shown in Table 1.1. The construction programme is presented in Appendix B.

Table 1.1 Summary of the construction Activities Undertaken during the Reporting Month.

Construction Activities undertaken
• Tree Felling

1.6. There are no updates on the scope of works and construction methodologies.

1.7. The project organisational chart specifying management structure and contact details are shown in Appendix C.

1.8. A summary of the valid permits, licences, and /or notifications on environmental protection for this Project is presented in Table 1.2

Table 1.2 Summary of the Status of Valid Environmental Licence, Notification, Permit and Documentations

Permit/ Licences/ Notification	**Reference**	**Validity Period**	**Remarks**
Environmental Permit	EP- 457/2013/C	Throughout the Contract	Permit granted on 16/01/2018
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation (Form NA)	428806	Throughout the Contract	Expired on 19 September 2019.
Wastewater Discharge Licence	WT00030288-2018	Until 28/02/2023	Licence cancelled on 19 September 2019.
Chemical Waste Producer Registration	WPN5111-236-N2345-03	Throughout the Contract	Licence cancelled on 19 September 2019.
Billing Account for Disposal of Construction Waste	7029654	Throughout the Contract	Account granted on 22/12/2017
Construction Noise Permit	GW-RE0534-19	Until 23/10/2019	Licence cancelled on 19 September 2019.

2. ENVIRONMENTAL STATUS

2.1. Environmental permit (EP) conditions under the EIAO, submission status under the EP and implementation status of mitigation measures had been reviewed and implemented on schedule. The status of required submissions under the EP (EP-457/2013/C) as of the reporting period for the Project are summarised in Table 2.1

Table 2.1 Summary of Status of Required Submission for EP-457/2013/C for the Project

EP Condition (EP-457/2013/C)	Submission	Submission date
Condition 1.12	Notification of Commencement Date of Construction of the Project	1 February 2018
Condition 2.3	Community Liaison Group	5 January 2018
Condition 2.4	Management organisation of the main construction companies	22 December 2017
Condition 2.5	Construction Programme and EP Submission Schedule	08 January 2018 / 18 January 2018
Condition 2.6	Design Drawing	08 January 2018
Condition 2.8	Landscape Mitigation Plan	12 January 2018
Condition 2.9	Construction Noise Mitigation Measure Plan (CNMMP)	15 February 2018
Condition 3.3	Baseline Monitoring Report	1 February 2018
Condition 3.4	Monthly EM&A Report (August 2019)	9 September 2019

2.2. Details of the major construction activities undertaken in this reporting period are shown in Table 2.2.

Table 2.2 Summary of the construction Activities Undertaken during the Reporting Month.

Construction activities undertaken	**Remarks on progress**
• Tree Felling	• Completed

2.3. The drawing showing the project layout and the location of the monitoring stations and environmental sensitive receivers are attached in Appendix A and Appendix K. Co-ordinates of the monitoring location is shown in below:

SKH Tsoi Kung Po Secondary School (M-A3 / M-N3) under HK80 Geographical Coordinates – Latitude: 22.314719, Longitude: 114.180694

3. MONITORING RESULTS

3.1. Monitoring Parameters

Air Quality

3.1.1. The impact monitoring had been carried out in accordance with section 5.8 of the approved EM&A Manual to determine the 1-hour and 24-hour total suspended particulates (TSP) levels at the monitoring location in the reporting report.

3.1.2. The sampling frequency of at least once in every 6 days, shall be strictly observed at the monitoring station for 24-hour TSP monitoring. For 1-hour TSP monitoring, the sampling frequency of at least 3 times in every 6 days should be undertaken when the highest dust impact occurs.

3.1.3. General meteorological conditions (wind speed, direction and precipitation) and notes regarding any significant adjacent dust producing sources had also been recorded throughout the impact monitoring period.

Noise

3.1.4. Construction noise level shall be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). L_{eq} (30min) shall be used as the monitoring parameter for the time period between 0700 and 1900 hours on normal weekdays.

3.1.5. For all other time periods, L_{eq} (5min) shall be employed for comparison with the Noise Control Ordinance (NCO) criteria.

3.1.6. As supplementary information for data auditing, statistical results such as L_{10} and L_{90} shall also be obtained for reference.

3.2. Monitoring Equipment

Air Quality

3.2.1. 1-hour TSP levels and 24-hour TSP had been measured with direct reading dust meter and High Volume Samplers respectively. It has been demonstrated its capability in achieving comparable results with high volume sampling method as set out in the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50).

3.2.2. The 1-hour TSP meter was calibrated by the manufacturer prior to purchasing. Zero response of the instrument was checked before and after each monitoring event. Operation of the 1-hour TSP meter followed manufacturer's Operation and Service Manual. The 24-hour TSP meter was calibrated against firmware 80570-8100-V1.0.4, annually. Operation of the 24-hour TSP meter followed manufacturer's Operation and Service Manual. Valid calibration certificate of dust monitoring equipment is attached in Appendix H.

3.2.3. A summary of the equipment that was deployed for the 24- hour averaged monitoring is shown in Table 3.1. The TSP monitoring was conducted as per the schedule presented in Appendix G.

3.2.4. The equipment used for 1-hour TSP and 24-hour TSP measurement and calibration are summarised in Table 3.1

Table 3.1 Construction Dust Monitoring Equipment

Monitoring Parameter	Monitoring Equipment	Serial Number	Date of Calibration
1-hour TSP	Sibata LD-3B Digital Dust Indicator	296093	15 Oct 2018
24-hour TSP	TE-5170X High Volume Sampler	1048	10 Sep 2019
	TE-5025A Calibration Kit	3465	22 Jan 2019

Noise

3.2.5. Sound level meter in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications has been used for carrying out the noise monitoring. The sound level meter has been checked using an acoustic calibrator. The wind speed and other metrological data has been recorded from Hong Kong Observatory- King's Park meteorological station, along with portable wind speed meter stand by as back up if malfunction occurred or data was not recorded from HKO.

3.2.6. An acoustic calibrator and sound level meter using for the monitoring is within the valid period and were calibrated per year. Valid calibration certificate of noise monitoring equipment is attached in Appendix I.

3.2.7. The details of equipment using for monitoring are listed in Table 3.2, as below:

Table 3.2 Monitoring Equipment Used in Monitoring

Monitoring Equipment	Serial Number	Date of Calibration
Nti XL2 Sound Level Meter	A2A-13548-E0	10 Jan 2019
Rion NC-74 Sound Level Calibrator	34504770	23 Nov 2018

3.3. Monitoring Methodology and QA/QC results

Air Quality

3.3.1. The 1-hour TSP monitor, portable dust meter (Sibata Digital Dust Indicator LD-3B) was used for the impact monitoring. The 1-hour TSP meter provides a real time 1-hour TSP measurement based on 90^{o} light scattering. Three 1-hour TSP level were logged per every six days.

3.3.2. The 24-hour TSP monitor, High Volume Sampler (Tisch TE 5170 High Volume Air Sampler) was used for the impact monitoring. The 24-hour TSP monitoring consists of the following:

- The HVS was set at the monitoring location, with electricity supply connected and secured;
- HVS was calibrated before commencing the 1st measurement;

- The filter paper was weight and provided by HOKLAS lab (Acumen Laboratory and Testing Limited and ALS Technichem (HK) Pty Ltd) before and after the sampling. Certificate of HOKLAS accredited laboratory can be referred to Appendix J;
- The airflow over time during sampling process was recorded by the HVS.

3.3.3. HVS was free- standing with no obstruction. The following criteria were considered in the installation of the HVS:

- Appropriate support to secure the samples against gusty wind needed to be provided the monitoring station;
- A minimum of 2m separation from walls, parapets and penthouses was required for rooftop samplers;
- No furnace or incinerator flues was nearby;
- Airflow around the sampler was unrestricted; and
- Permission could be obtained to set up the samplers and gain access to the monitoring station.

3.3.4. Preparation of Filter Papers

- Glass fiber filters were labelled and sufficient filters that were clean and without pinholes were selected;
- All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25℃ and not varied by more than ±3℃; the relative humidity (RH)was 40%; and
- Acumen Laboratory and Testing Limited and ALS Technichem (HK) Pty Limited, as HOKLAS accredited laboratory, implemented comprehensive quality assurance and quality control programmes on the filters.

3.3.5. Field Monitoring

- The power supply was checked to ensure that the HVS was working properly;
- The filter holder and area surrounding the filter were cleaned;
- The filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- 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;
- The shelter lid was closed and secured with an aluminum strip;
- The HVS was warmed- up for about 5 minutes to establish run- temperature conditions;
- A new flow rate record sheet was inserted into the flow recorder;
- The flow rates of the HVS was checked and adjusted to between 1.22-1.37 m^3min^{-3}, which was within the range specified in the EM&A Manual (i.e. 0.6- 1.7 m^3min^{-3});
- The programmable timer was set for a sampling period of 24 hours ±hour, and the starting time, weather condition and filter number were recorded;
- The initial elapsed time was recorded;
- At the end of sampling, the sampled filter was removed carefully and folded in half so that only surfaces with collected particulate matter were in contact;
- The filter paper was placed in a clean plastic envelope and sealed; all monitoring information was recorded on a standard data sheet and

- The filters were sent to (Acumen Laboratory and Testing Ltd and ALS Technichem (HK) Pty Ltd) for analysis.

3.3.6. Maintenance and Calibration

- The HVS and their accessories were maintained in a good working condition. For example, motor brushes were replaced routinely and electrical wiring was checked to ensure a continuous power supply; and
- The flow rate of each HVS with mass flow controller was calibrated using an orifice calibrator, Initial calibrations of the dust monitoring equipment were conducted upon installation and prior to commissioning. Five- point calibration was carried out for HVS using TE-5025 Calibration Kit. HVS is calibrated bimonthly. The calibration records for the HVS is given in Appendix H.

3.3.7. Wind Data Monitoring

- The wind speed has been recorded from Hong Kong Observatory- King's Park meteorological station, along with portable wind speed meter stand by as back up if malfunction occurred or data was not recorded from HKO

Noise

3.3.8. All noise measurements by the meter were set to FAST response and on the A-weighted equivalent continuous sound pressure level (L_{eq}) in decibels dB(A). $L_{Aeq(30mis)}$ was used as the monitoring metric for the time period between 0700 –1900 hours on normal weekdays. The measured noise levels were logged every 5 minutes throughout the monitoring period.

3.3.9. Prior to the noise measurement, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Checking was conducted before and after the monitoring. The calibration level before and after the noise measurement is agreed to within 1.0 dB.

3.3.10. Noise measurements should not be made in presence of fog, rain, wind with a steady speed exceeding 5 ms^{-1} or wind with gusts exceeding 10 ms^{-1}. The wind speed was checked with a portable wind speed meter capable of measuring with speeds in ms^{-1}.

3.4. Monitoring Location

Air Quality

3.4.1. In order to identify and seek for the access of the dust monitoring locations designated in the EM&A Manual, site visit was conducted by ET. During the site visit, the original proposed monitoring location was declined by the management office of Ko Fai House, Kwun Fai Court due to the set-up of equipment on the rooftop and the middle level of building. Alternative air monitoring station had been proposed by ET and approved by IEC before the baseline monitoring started. 1 designated monitoring location was identified and agreed with IEC and EPD. Details of air monitoring station are described in Table 3.3. The location plan of air quality monitoring station is shown in Appendix K.

Table 3.3 Location of the Dust Monitoring Station

Air Quality Monitoring Station	Dust Monitoring Station
M-A3	SKH Tsoi Kung Po Secondary School

Noise

3.4.2. According to the EM&A Manual, construction noise impact monitoring should be conducted at designated monitoring station. In order to the access to some of the proposed monitoring locations stated in the EM&A Manual was either rejected or unavailable, alternative location was proposed and agreed by the ER. IEC and EPD. The details of construction noise monitoring location are listed in Table 3.4 and shown in Appendix K along with location of noise sensitive receivers (NSRs) related to this Works Contract.

Table 3.4 Noise Monitoring Station

Noise Monitoring Station	Identified Noise Monitoring Station	Type of Measurement
M-N3	SKH Tsoi Kung Po Secondary School	Free-field

3.5. Monitoring date, time, frequency and duration

3.5.1. A summary of impact monitoring duration, sampling parameter and frequency is presented in Table 3.5.

Table 3.5: Summary of Impact Monitoring Programme

Impact Monitoring	Duration	Sampling Parameter	Frequency
Dust	1-hour continuous measurement	1-hour TSP	3 times per six days
Dust	24-hour continuous sampling	24-hour TSP	Once per six days
Noise	30-minute continuous measurement	$L_{eq\ 30\ min}$, L_{10} and L_{90} as reference.	Once $L_{eq\ 30\ min}$ from 0700 – 1900 per seven days

3.6. Result Summary

Air Quality

3.6.1. According to our field observations, the major dust source identified at the designated air quality monitoring station in the reporting month are summarised in Table 3.6

Table 3.6 Observation at Dust Monitoring Station

Monitoring Station	Major Dust Source
M-A3	Nearby Traffic emissions

3.6.2. Air quality impact monitoring for the reporting month was carried out on 4, 10, 16 September 2019 for 1-hour TSP and 24-hour TSP.

3.6.3. Last impact monitoring of the Project was conducted on 16 September 2019. Impact monitoring for the Project will be continued by the ET of HY/2018/08 CKR-Central Tunnel.

3.6.4. The results for 1-hour TSP and 24-hour TSP are summarized in Table 3.7 and Table 3.8. The measurement data and details of influencing factors such as weather conditions and site observation are presented in Appendix L.

Table 3.7 Summary of 1-hour TSP Monitoring Results

Monitoring Location	Range(μg/m3)	Action Level(μg/m3)	Limit Level(μg/m3)
M-A3	52-65	333	500

Table 3.8 Summary of 24-hour TSP Monitoring Results

Monitoring Location	Range(μg/m3)	Action Level(μg/m3)	Limit Level(μg/m3)
M-A3	8-49	153	260

Noise

3.6.5. According to our field observations, the major noise source identified at the designated noise monitoring station in the reporting month are summarised in Table 3.9:

Table 3.9 Observation at Noise Monitoring Station

Monitoring Station	Major Noise Source
M-N3	Traffic, School activity

3.6.6. The construction noise impact monitoring for the reporting month was carried out on 4, 10, 16 September 2019.

3.6.7. Last impact monitoring of the Project was conducted on 16 September 2019. Impact monitoring for the Project will be continued by the ET of HY/2018/08 CKR-Central Tunnel

3.6.8. The measurement data are shown in Appendix M and summarized in Tables 3.10:

Table 3.10 Summary of Noise Monitoring Results –M-N3

Time Period	Parameter	Range, dB(A)			Action Level	Limit Level
		L_{eq}*	L_{10}*	L_{90}*		
Normal working hour from 0700-1900	$L_{eq\ 30min}$	63.5-64.8	64.8-66.3	60.3-62.4	When one documented compliant is received	For schools: 70dB(A) during normal teaching period and 65 dB(A) during examination periods

Remarks:

1. * Free Field Noise levels were adjusted with a correction of +3 dB(A).

Waste management

3.6.9. The waste generated from this Project includes inert construction and demolition (C&D) materials, and non-inert C&D materials. Non-inert C&D materials are made up of general refuse, vegetative wastes and recyclable wastes such as plastics and paper/cardboard packaging waste. Steel materials generated from the project are also grouped into non-inert C&D materials as the materials were not disposed of with other inert C&D materials. With reference to relevant handling records and trip tickets of this Project, the quantities of different types of waste generated in the reporting month are summarised in Table 3.11. Details of cumulative waste management data are presented as a waste flow table in Appendix N.

Table 3.11 Quantities of waste generated from the Project

Reporting period	Quantity						
	Inert C&D Materials (in '000m3)	Chemical Waste (in '000kg)	Non-inert C&D Materials				
			Others, e.g. General Refuse disposed at Landfill (in '000m3)	Recycled materials			
				Paper/card board (in '000kg)	Plastics (in '000kg)	Metals (in '000kg)	Yard waste (in '000kg)
1-19 Sep-2019	0.042	0.00	0.015	0.00	0.00	0.00	0.009

4. SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND PROSECUTIONS

4.1. The Environmental Complaint Handling Procedure is shown in below Table 4.1:

Table 4.1 Environmental Complaint Handling Procedure

Complaint Received via Project Hotline	Complaint Received via 1823 or from other government departments
Contractor notify ER, ET and IEC	ER notify Contractor, ET and IEC
Contractor log complaint and date of receipt onto the complaint database. Contractor, ER and ET to conduct investigation of complaint	
If complaint is considered not valid	If complaint is found valid
ET or ER to reply the complainant if necessary	Contractor to identify and implement remedial measures in consultation with the IEC, ET and ER.
	The ER, ET and IEC to review the effectiveness of the Contractor's remedial measures and the updated situation; ET to undertake additional monitoring and audit to verify the situation if necessary, and oversee that circumstances leading to the complaint do not recur. ER to conduct further inspection as necessary.
If the complaint is referred by the EPD, the Contractor to prepare interim report on the status of the complaint investigation and follow-up actions stipulated above, including the details of the remedial measures and additional monitoring identified or already taken, for submission to EPD within the time frame assigned by the EPD	
The ET to record the details of the complaint, results of the investigation, subsequent actions taken to address the complaint and updated situation including the effectiveness of the remedial measures, supported by regular and additional monitoring results in the monthly EM&A reports	

4.2. Should non-compliance of the criteria occur, action in accordance with the Action Plan in Appendix D and Appendix E shall be carried out. No non-compliance was reported in the reporting period.

4.3. No exceedance of the Action and Limit Levels of the regular construction noise was recorded during the reporting period

4.4. No exceedance of the Action and Limit Level of 1-hour TSP and 24-hour TSP monitoring was recording during the reporting period.

4.5. No environmental complaint was received in the reporting period.

4.6. No notification of summons and prosecution was received in the reporting period.

4.7. Statistics on complaints, notifications of summons and successful prosecutions are summarized in Appendix O.

5. EM&A SITE INSPECTION

5.1. Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures under the Contract. In the reporting period, three (3) site inspections were carried out on 3, 10, 17 September 2019, along with bi-weekly inspection of the implementation of landscape and visual mitigation measures conducted on 3, 17 September 2019.

5.2. Last site inspection was carried out on 17 September 2019.

5.3. One joint site inspection with IEC also undertaken on 10 September 2019. Minor deficiencies were observed during weekly site inspection or joint site inspection. Key observations during the site inspections are summarized in Table 5.1.

Table 5.1 Site Observations

Date	Environmental Observations	Follow-up Status
3 Sep 2019	No major observation was found.	-
10 Sep 2019	No major observation was found.	-
17 Sep 2019	No major observation was found.	-

5.4. According to the EIA Study Report, Environmental Permit, contract documents and EM&A Manual, the mitigation measures detailed in the documents are implemented as much as practical during the reporting period. An updated Implementation Status of Environmental Mitigation Measures (EMIS) is provided in Appendix F.

6. FUTURE KEY ISSUES

6.1. The Project was completed on 19 September 2019 and handed over to HY/2018/08 CKR-Central Tunnel on 20 September 2019. Last impact monitoring was conducted on 16 September 2019 and last weekly site inspection was carried out on 17 September 2019. Environmental monitoring and audit for the Project will be continued by the ET of HY/2018/08 CKR-Central Tunnel.

7. CONCLUSION AND RECOMMENDATIONS

7.1. This 20th monthly Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken during the period from 1 September 2019 to 19 September 2019 in accordance with the EM&A Manual and the requirement under EP- 457/2013/C

7.2. Air quality (including 1-hour TSP and 24-hour TSP) and noise impact monitoring were carried out in the reporting period. All monitoring results are satisfactory. No exceedance of the Action and Limit Level was recorded during the reporting period.

7.3. Weekly environmental site inspections were conducted during the reporting period. Joint site inspection with IEC were carried out on 10 September 2019. No major deficiencies were observed during site inspections. The environmental performance of the Project was therefore considered satisfactory.

7.4. No environmental complaint was received in the reporting period.

7.5. No non-compliance was reported in the reporting period.

7.6. No notification of summons or prosecution was received since commencement of the Contract.

7.7. The Project was completed on 19 September 2019 and handed over to HY/2018/08 CKR-Central Tunnel on 20 September 2019. Last impact monitoring was conducted on 16 September 2019 and last weekly site inspection was carried out on 17 September 2019. Environmental monitoring and audit for the Project will be continued by the ET of HY/2018/08 CKR-Central Tunnel.

Appendix A
Alignment and Works Area For the Contract No. HY/2014/09

LEGENDS:

CCTV CAMERA

Rev. 修訂	Description 內容摘要	By 設計	Date 日期
A	SECOND ISSUE	JK	20/12/17
-	FIRST ISSUE	JK	11/12/17

ARUP Mott MacDonald
Joint Venture

Successfully Building a Better Future.
西松建設
NISHIMATSU CONSTRUCTION CO.,LTD.

Project title 工程名稱
Contract No. HY/2014/09
Central Kowloon Route -
Ho Man Tin Access Shaft

Drawing title 圖紙名稱
SITE LAYOUT PLAN
(PORTION 1A, 1B, 1C, 1D, 1E & 1F)

Drawing no. 圖紙編號	Rev. 修訂
NCC/HMTS/01/0001	A

Drawn By 繪圖	Checked By 複核	Approved By 批准人
TC	JK	OI

Scale 比例	Status 階段
1:1000 @ A3	WORKING

路政署 HIGHWAYS DEPARTMENT
主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE

Appendix B
Construction Programme

Successfully Building a Better Future.
西松建設
NISHIMATSU CONSTRUCTION CO.,LTD.

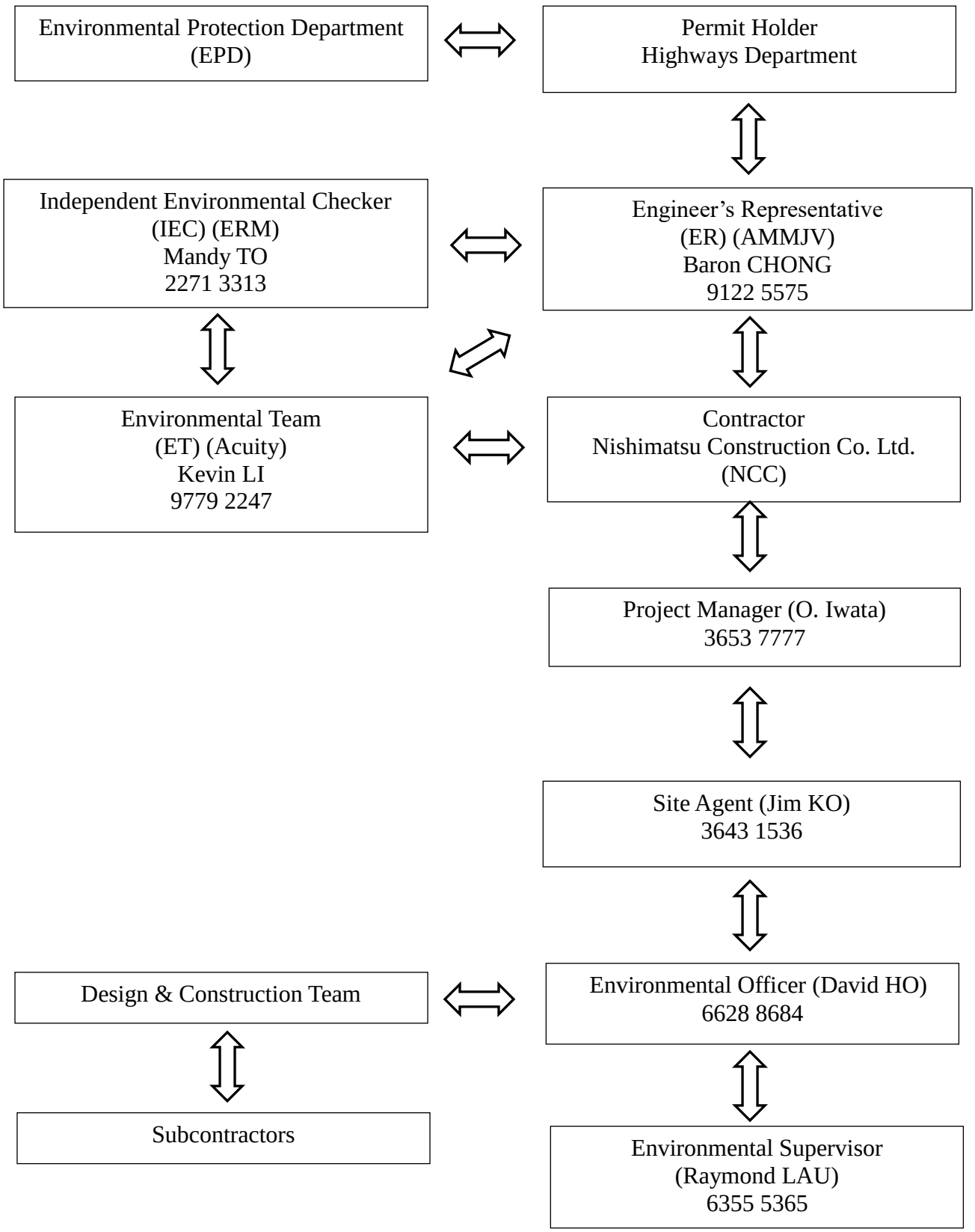
Contract No. HY/2014/09

Central Kowloon Route - Ho Man Tin Access Shaft **Work Programme**

		Calendar Year/Month																						
		2017	2018												2019									
		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Description of Work	**Duration**																								
Decant of Housing Authority Mock Up Centre and Site Establishment	2 mth																								
Diaphragm Wall Excavation	9.5 mth																								
Soil Excavation of Shaft	3.5 mth																								
Rock Excavation of Shaft	6 mth																								

Appendix C
Project Organization Chart

Project Organisation Chart



LEGEND:

Line of Communication

Appendix D
Dust Event-Action Plan (EAP)

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

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

Note:

ET – Environmental Team ER – Engineer's Representative

IEC – Independent Environmental Checker

Appendix E
Noise Event-Action Plan (EAP)

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

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.		5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	until the exceedance is abated.

Note:

ET – Environmental Team

IEC – Independent Environmental Checker

ER – Engineer's Representative

Appendix F
Environmental Mitigation Implementation Schedule (EMIS)

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
Construction Dust Impact								
S4.3.10	D1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact To meet HKAQO and TM-EIA criteria	• Implemented
S4.3.10	D2	• Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact To meet HKAQO and TM-EIA criteria	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		no less than 1.3 L/m^2 to achieve the dust removal efficiency.						
S4.3.10	D3	• Proper watering at exposed spoil should be undertaken throughout the construction phase; • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extended beyond the	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	• APCO • To control the dust impact To meet HKAQO and TM-EIA criteria	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		pedestrian barriers, fencing or traffic cones; • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle. • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • When there are open excavation						

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		and reinstatement works, hoarding of not less than 2.4m high should be provided and properly maintained as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place						

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry-pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides;							

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		• Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabilizer within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.						
S4.3.10	D6	Implement regular dust monitoring	Monitoring of dust impact	Contractor	Selected rep.	Construction stage	• TM-EIA	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		under EM&A programme during the construction stage.			dust monitoring station			
Construction Noise (Airborne)								
S5.4.1	N1	Implement the following good site practices: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • Machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • Plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;	Control construction airborne noise	Contractor	All construction sites	Construction stage	• Annex 5, TM-EIAO	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		• Silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works; • Mobile plant should be sited as far away from NSRs as possible and practicable; • Material stockpiles, mobile container site office and other structures should be effectively utilized, where practicable, to screen noise from on-site construction activities.						
S5.4.1	N2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening	Contractor	All construction sites	Construction stage	• Annex 5, TM-EIAO	• Implemented
S5.4.1	N3	Install movable noise barriers (typical	Screen the noisy plant items to	Contractor	All	Construction stage	• Annex 5,	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressors, generators and handheld breakers, etc.	be used at all construction sites		construction sites where practicable		TM-EIAO	
S5.4.1	N4	Use 'Quiet plant'	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIAO	• Implemented
S5.4.1	N5	Loading/ unloading activities should be carried out inside the full enclosure of mucking out points.	Reduce the noise levels of loading/ unloading activities	Contractor	Mucking out locations	Construction stage	• Annex 5, TM-EIAO	• Implemented
S5.4.1	N6	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIAO	• Implemented
S5.4.1	N7	Implement a noise monitoring	Monitor the construction noise	Contractor	Selected rep.	Construction stage	• TM-EIAO	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		programme under EM&A programme.	levels at the selected representative location		noise monitoring station			
Water Quality (Construction Phase)								
S6.9.1.1	W1	• In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN1/94), construction phase mitigation measures shall include the following: <u>Construction Runoff</u> • At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both	To minimize water quality impact from the construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN 1/94 • TM-EIAO • TM-DSS	• Implemented.

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction; • The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a silt/ sediment trap. The sediment/ silt traps should be incorporated in the permanent drainage channels to						

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		enhance deposition rates; • The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/ sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m3/s a sedimentation basin of 30 m3 would be required and for a flow rate of 0.5 m3/s the basin would be 150 m3. The detailed design of the sand/ silt traps shall be undertaken by the contractor prior to the commencement of construction; • All exposed earth areas should be completed and vegetated as soon as						

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. Exposed slope surfaces should be covered by tarpaulin or other means; • The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows, and all traffic areas and access roads protected by coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows; • All drainage facilities and erosion and sediment control structures should							

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas; • Measures should be taken to minimize the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;						

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		• Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system; • Manholes should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers; • Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm						

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		is imminent or forecasted, and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes; • All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and site wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the						

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		continued efficiency of the process. The section of access road leading to, and exiting from, the wheel wash bay to the public road should be paved with sufficient backfall toward the wheel wash bay to prevent vehicle tracking of soil and silty water to public roads and drains; • Oil interceptors should be provided in the drainage system downstream of any oil/ fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain;						

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		• Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts; • All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby; • Adopt best management practices; • All earth works should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable.						

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
S6.9.1.2	W2	<u>Underground Works</u> • Uncontaminated discharge should pass through sedimentation tanks prior to of-site discharge; • The wastewater with a high concentration of SS should be treated (e.g. by sedimentation tanks with sufficient retention time) before discharge. Oil interceptors would also be required to remove the oil, lubricants and grease from the wastewater; • Direct discharge of the bentonite slurry (as a result of D-wall) is not allowed. It should be reconditioned and reused wherever practicable. Temporary storage locations (typically a properly closed warehouse) should be provided on	To minimize construction water quality impact from the works	Contractor	All access shaft location	Construction stage	• Water Pollution Control Ordinance • ProPECC PN 1/94 • TM-DSS • TM-EIAO	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		site for any unused bentonite that needs to be transported away after all the related construction activities area completed. The requirements in ProPECC PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.						
S6.9.1.3	W3	<u>Sewage Effluent</u> • Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • TM-DSS	• Implemented
S6.9.1.6	W6	<u>Accidental Spillage</u> In order to prevent accidental spillage of	To minimize water quality impact from accidental spillage	Contractor	All construction	Construction stage	• Water Pollution Control	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		chemicals, the following is recommended: • All the tanks, containers, storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and stormwater drains; • The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings. • Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste Disposal (Chemical Waste) (General) Regulation.			site where practicable		Ordinance • ProPECC PN 1/94 • TM-EIAO • TM-DSS	

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
Waste Management (Construction Waste)								
S7.4.1	WM1	<u>On-site sorting of C&D material</u> • Geological assessment should be carried out by competent persons on site during excavation to identify materials which are not suitable to use as aggregate in structural concrete (e.g. volcanic rock, Aplite dyke rock, etc.). Volcanic rock and Aplite dyke rock should be separated at the source sites as far as practicable and stored at designated stockpile area preventing them from delivering to crushing facilities. The crushing plant operator should also be reminded to set up measures to prevent unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use	Contractor	All construction sites	Construction stage	• DEVB (W) No. 6/2010	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		use. Details regarding control measures at source site and crushing facilities should be submitted by the Contractor for the Engineer to review and agree. In addition, site records should also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) No. 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc. should be explored.						
S7.5.1	WM2	Construction and Demolition Material	Good site practice to minimize	Contractor	All	Construction stage	• Land	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		• Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement; • Carry out on-site sorting; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; • Adopt 'selective demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible; • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and	the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal		construction sites		(Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005	

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		• Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction.						
S7.5.1	WM3	<u>C&D Waste</u> • Standard formwork or pre-fabrication should be used as far as practicable in order to minimize the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage; • The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.						
S7.5.1	WM6	Chemical Waste	Control the chemical waste and	Contractor	All	Construction stage	• Waste Disposal	• Implemented.

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		• Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes; • Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed, have a capacity of less than 450 L unless the specification has been approved by EPD, and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation;	ensure proper storage, handling and disposal		construction sites		(Chemical Waste) (General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		• The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste, enclosed on at least 3 sides, have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste stored in that area, whichever is the greatest, have adequate ventilation, covered to prevent rainfall entering, and arranged so that incompatible materials are adequately separated; • Disposal of chemical waste should be via a licensed waste collector, be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a						

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		chemical waste collection service and can supply the necessary storage containers, or be to a reuser of the waste, under approval from EPD.						
S7.5.1	WM7	<u>General Refuse</u> • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes; • A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. • Aluminum cans are often recovered	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible; • Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor.						
Hazard to Life								
S9.18	H1	Blasting activities regarding transport and use of explosives should be supervised and audited by competent site staff to ensure full compliance with the blasting permit conditions.	To ensure that the risks from the proposed explosives handling and transport would be acceptable	Contractor	Works areas at which explosives would be used	Construction stage	• Dangerous Goods Ordinance	• Implemented
S9.6, para.4	H2	Detonators shall not be transported in the same vehicle with other Category 1	To reduce the risk of explosion during the transport of	Contractor	-	Construction stage	• Dangerous Goods	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		Dangerous Goods.	cartridged emulsion				Ordinance	
S9.6, para.8	H3	The explosives delivery trucks should be approved by Mines Division and should meet the regulatory requirements for transport of explosives.	To comply with the requirements for approval of an explosives delivery vehicle	Contractor	-	Construction stage	• Dangerous Goods Ordinance	• Implemented
S9.10, para.7 and S9.18	H4	Blast cover should be provided for shaft at HMT, and kept closed during blasting. Provision of blast doors or heavy duty blast curtains should be implemented at the shaft to prevent flyrock and control the air overpressure.	To ensure safe use of explosives	Contractor	Shaft	Construction stage	-	• Implemented
S9.16	H5	Only the required quantity of explosives for a particular blast should be transported to avoid the return.	To reduce risks during explosives transport	Contractor	Works areas at which explosives would be used	Construction stage	-	• Implemented
S9.18	H7	The approved truck dedicated for transport of explosives should comply	To reduce the risk during explosives transport	Contractor	Works areas of which	Construction stage	• Dangerous Goods	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		with the "Guidance Note on Requirements for Approval of an Explosives Delivery Vehicle" issued by CEDD Mines Division. The truck should be periodically inspected and properly maintained in good operation conditions. The fuel carried in the fuel tank should be minimized to reduce the duration of fire. Adequate fire fighting equipment shall be provided, inspected and replaced periodically (e.g. fire extinguishers).			explosives would be used		Ordinance	
S9.18	H8	The driver and his assistant should be physically healthy, experienced and have good safe driving records. The driver should hold a proper driving licence for the approved transport truck. Dedicated training programme and regular road safety briefing sessions/	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction stage	-	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		workshops should be provided to enhance their safe driving attitude and practice. Smoking should be strictly prohibited.						
S9.18	H9	Emergency response plans in case of road accident should be prepared and implemented. The driver and his assistant should be familiar with the emergency procedures including evacuation, and proper communication/ fire-fighting equipment should be provided to the driver and his assistant.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction stage	-	• Implemented
S9.18	H10	Close liaison and communication among Mines Division, Contractors for transport of explosives, and working staff of the blasting should be established. In case of any change of work schedule leading to cancellation or variation of explosives required, relevant parties should be	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction stage	-	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		informed in time to avoid unused explosives at the work sites.						
S9.18	H11	Close liaison and communication with Fire Services Department should be established to reduce the accidental detonation escalated from a fire. The contractors for transport of explosives should use the preferred transport routes as far as practicable.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction stage	-	• Implemented
S9.18	H12	Contingency plan should be prepared for transport of explosives under severe weather conditions such as rainstorms and thunderstorms.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction stage	-	• Implemented
S9.18	H13	For explosive transport, all packages of explosives on the truck should be properly stored in the truck compartment as required. Packaging of the explosives should remain intact	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction stage	-	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		(i.e. damage free) until they are transferred to the blasting site.						
S9.18	H14	Availability of a parking space should be ensured before commencement of transport of explosives. Location for loading and unloading of explosives should be as close as possible to the shaft. No hot work should be performed in the vicinity during the time of loading and unloading.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction stage	-	• Implemented
S9.18	H22	It is recommended to explore to minimize the use of the cartridged emulsion explosives and maximize the use of bulk emulsion explosive as far as practicable.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction stage	-	• Implemented
S9.18	H24	It is recommended to explore to use smaller explosive charges such as 'cast boosters' or 'mini-cast booster' instead of cartridged emulsion as primers for	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be	Construction stage	-	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		bulk emulsion. This option reduces the quantity of explosives required for transportation for the sections where bulk emulsion will be used.			used			
Landscape & Visual								
S10.10.1 Table 10.11	LV1	<u>Good Site Management</u> • Large temporary stockpiles of excavated material shall be covered with unobtrusive sheeting to prevent dust and dirt spreading to adjacent landscape areas and vegetation, and to create a neat and tidy visual appearance. • Construction plant and building material shall be orderly and carefully stored in order to create a neat and tidy visual appearance.	Minimize visual impact	Contractor	Within Project site	Construction stage	-	• Implemented
S10.10.1 Table	LV4	<u>Screen Hoarding</u> • Decorative screen hoarding should	Minimize visual impact	Contractor	Within Project site	Construction stage	-	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
10.11		be erected to screen the public from the construction area. It should be designed to be compatible with the existing urban context.						
S10.10.1 Table 10.11	LV5	<u>Lighting Control during Construction</u> • All lighting in the construction site shall be carefully controlled to minimize light pollution and night-time glare to nearby residencies and GIC. The Contractor shall consider other security measures, which shall minimize the visual impacts.	Minimize visual impact	Contractor	Within Project site	Construction stage	-	• Implemented
S10.10.1 Table 10.11	LV6	<u>Erosion Control</u> • The potential for soil erosion shall be reduced by minimizing the extent of vegetation disturbance on site and by providing a protective cover over newly exposed soil.	Minimize landscape impact	Contractor	Within Project site	Construction stage	-	• N/A

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/09 (Ho Man Tin Access Shaft)

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
S10.10.1 Table 10.11	LV7	<u>Tree Protection & Preservation</u> • Carefully protected during construction. Tree protection measures will be detailed at the Tree Removal Application stage and plans submitted to the relevant Government Department for approval in due course in accordance with ETWB TC no. 3/2006.	Minimize landscape and visual impact	Contractor	Within Project site	Construction stage	• 'Guidelines for Tree Risk Management and Assessment Arrangement on an Area Basis and on a Tree Basis', Greening, Landscape and Tree Management (GLTM) Section, DEVB • Latest recommended horticultural practices from	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
							GLTM Section, DEVB	
S10.10.1 Table 10.11	LV8	<u>Tree Transplantation</u> • For trees unavoidably affected by the Project that have to be removed, where practical transplantation will be chosen as the top priority method of removal. If this is not possible or practical compensatory planting will be provided for trees unavoidably felled (See LV10). For trees unavoidably affected by the Project works that are transplanted, transplantation must be carried out in accordance with ETWB TCW 2/2004 and 3/2006.	Minimize landscape and visual impact	Contractor	Within Project site and designated off-site locations	Prior to Construction stage	• ETWB TCW 3/2006 • Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DEVB • ETWB TCW 2/2004	• N/A
S10.10.1 Table 10.11	LV9	<u>Compensatory Planting</u> • For trees unavoidably affected by the Project that have to be removed,	Minimize visual impact and also enhance landscape	Contractor	Within Project site	Construction stage	• ETWB TCW 3/2006 • Latest	• Implemented

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		where practical transportation will be chosen as the top priority method of removal but if this is not possible or practical compensatory planting will be provided for trees unavoidably felled. All felled trees shall be compensated for by planting trees to the satisfaction of relevant Government projects. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006. • Compensatory tree planting may be incorporated into public open spaces and along roadside amenity areas affected by the construction works					recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DEVB • ETWB TCW 2/2004	

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		and therefore be part of the bigger wider planting plans. Onsite compensation planting is preferred but if necessary, additional receptor sites outside the Works Area shall be agreed separately with Government during the Tree Felling Application process.						
Cultural Heritage Impact (Construction Phase)								
S11.4.4	CH1	The contractor should be alerted during the construction on the possibility of locating archaeological remains and as a precautionary measure, AMO shall be informed immediately in case of discovery of antiquities or supposed antiquities in the subject sites.	To preserve any cultural heritage items which may be removed and damaged by the excavation	Contractor	During construction works	Construction stage	• AMOs requirements	• Implemented
EM&A Project								
S13.2	EM1	An Independent Environmental	Control EM&A Performance	Highways	All	Construction stage	• EIAO Guidance	• Implemented

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/09 (Ho Man Tin Access Shaft)

EIA Ref.	EM&A Log Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		Checker needs to be employed as per the EM&A Manual		Department	construction sites		Note No. 4/2010 • TM-EIAO	
S13.2-13.4	EM2	• An Environmental Team needs to be employed as per the EM&A Manual; • Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures; • An environmental impact monitoring needs to be implemented by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.	Perform environmental monitoring & auditing	Highways Department/ Contractor	All construction sites	Construction stage	• EIAO Guidance Note No. 4/2010 • TM-EIAO	• Implemented

Appendix G
Monitoring Schedule of the Reporting Month

Impact Monitoring Schedule for HMTS

Sep-19						
Sun	Mon	Tue	Wed	Thur	Fri	Sat
1	2	3	4	5	6	7
			Impact TSP-1hr & TSP-24hr monitoring for M-A3 Noise monitoring for M-N3			
8	9	10	11	12	13	14
		Impact TSP-1hr & TSP-24hr monitoring for M-A3 Noise monitoring for M-N3				
15	16	17	18	19	20	21
	Impact TSP-1hr & TSP-24hr monitoring for M-A3 Noise monitoring for M-N3					
22	23	24	25	26	27	28
29	30					

Appendix H
Calibration Certificates
(Air Monitoring)

SIBATA

SIBATA SCIENTIFIC TECHNOLOGY LTD.
1-1-62, Nakane, Soka, Saitama, 340-0005 Japan
TEL : 048-933-1582 FAX : 048-933-1591

CALIBRATION CERTIFICATE

Date: October 17, 2018

Equipment Name	:	Digital Dust Indicator, Model LD-3B
Code No.	:	080000-42
Quantity	:	1 unit
Serial No.	:	296093
Sensitivity	:	0.001 mg/m3
Sensitivity Adjustment	:	650CPM
Scale Setting	:	October 15, 2018

We hereby certify that the avobe mentioned instrment has been calibrated satisfactory.

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Tong Zhang

Tong Zhang
Overseas Sales Division

TISCH Environmental

RECALIBRATION DUE DATE:
January 22, 2020

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	January 22, 2019	**Rootsmeter S/N:** 438320	**Ta:** 293	°K
Operator:	Jim Tisch		**Pa:** 756.9	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **3465**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4330	3.2	2.00
2	3	4	1	1.0230	6.4	4.00
3	5	6	1	0.9170	7.9	5.00
4	7	8	1	0.8730	8.7	5.50
5	9	10	1	0.7180	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)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
1.0087	0.7039	1.4233	0.9958	0.6949	0.8799
1.0044	0.9818	2.0129	0.9915	0.9693	1.2443
1.0024	1.0931	2.2505	0.9896	1.0791	1.3912
1.0013	1.1470	2.3603	0.9885	1.1323	1.4591
0.9959	1.3871	2.8467	0.9832	1.3694	1.7598
QSTD	**m=**	**2.08653**	**QA**	**m=**	**1.30655**
	b=	**-0.03834**		**b=**	**-0.02370**
	r=	**0.99989**		**r=**	**0.99989**

Calculations

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

For subsequent flow rate calculations:

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

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

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

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Tsoi Kung Po Secondary School	Site ID:	M-A3	Date:	23-Aug-2019
Serial No:	1048	Model:	TE-5170X	Operator:	Tim

Ambient Condition

Corrected Pressure (mm Hg):	760.0	Temperature (deg K):	298.2

Calibration Orifice

Model:	TE-5025	Slope:	2.08653
Serial No.:	3465	Intercept:	-0.03834
Calibration Due Date:	22-Jan-20	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	1.72	0.647	29.0	28.99
2	2.77	0.816	33.3	33.29
3	3.31	0.890	35.2	35.19
4	2.10	0.713	30.8	30.79
5	3.65	0.934	36.3	36.29

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 25.2593 b= 12.7084 Corr. Coeff= 0.9999

Sampler set point(SSP) 43 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature

Pav = average pressure

Tim

Checked by: _____ Date: 23-Aug-19

InnoTech Instrumentation Co. Ltd.
創 新 科 儀 有 限 公 司

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Tsoi Kung Po Secondary School	Site ID:	M-A3	Date:	10-Sep-2019
Serial No:	1048	Model:	TE-5170X	Operator:	Tim

Ambient Condition

Corrected Pressure (mm Hg):	760.0	Temperature (deg K):	298.2

Calibration Orifice

Model:	TE-5025	Slope:	2.08653
Serial No.:	3465	Intercept:	-0.03834
Calibration Due Date:	22-Jan-20	Corr. Coeff:	0.99989

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	1.74	0.650	28.9	28.89
2	2.73	0.810	33.1	33.09
3	3.34	0.894	35.4	35.39
4	2.16	0.723	30.8	30.79
5	3.68	0.938	36.5	36.49

Sampler Calibtation Relationship (Qa on x-axis, IC on y-axis)

m= 26.5569 b= 11.6086 Corr. Coeff= 1.0000

Sampler set point(SSP) 44 CFM

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate

IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
(1.21*m+b)/[Sqrt(298/Tav)(Pav/760)]

m = sampler slope
b = sampler intercept
I = chart response
Tav = average temperature

Pav = average pressure

Tim

Checked by: _____ Date: 10-Sep-19

Appendix I
Calibration Certificates (Noise)

(A+A)*L Acoustics and Air Testing Laboratory Co. Ltd.
聲學及空氣測試實驗室有限公司

Certificate of Calibration

for

Description:	***Sound Level Meter***
Manufacturer:	***NTi Audio***
Type No.:	***XL2 (Serial No.: A2A-13548-E0)***
Microphone:	***ACO 7052 (Serial No.:60997)***
Preamplifier:	***NTi Audio MA220 (Serial No.:5287)***

Submitted by:

Customer:	*Acuity Sustainability Consulting Limited*
Address:	*Unit 1908, iPlace, Nos. 301-305 Castle Peak Road, Kwai Chung, New Territories*

Upon receipt for calibration, the instrument was found to be:

☑ **Within**
☐ **Outside**

the allowable tolerance.

The test equipment used for calibration are traceable to National Standards via:
- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 8 January 2019

Date of calibration: 10 January 2019

Calibrated by: _____ ***Certified by:*** _____
Calibration Technician ***Mr. Ng Yan Wa***
Laboratory Manager

Date of issue: 10 January 2019

Certificate No.: APJ18-157-CC001

Room 422,Leader Industrial Centre,57-59 Au Pui Wan Street ,Fo Tan, Shatin,N.T.,Hong Kong
Tel: (852) 2668 3423 Fax:(852) 2668 6946
Homepage: http://www.aa-lab.com E-mail : inquiry@aa-lab.com

1. *Calibration Precaution:*

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 24 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.

2. *Calibration Conditions:*

Air Temperature: 22.3 °C
Air Pressure: 1006 hPa
Relative Humidity: 71.3 %

3. *Calibration Equipment:*

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV180064	HOKLAS

4. *Calibration Results*

Sound Pressure Level

Reference Sound Pressure Level

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	1000	94.0	±0.4

Linearity

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	1000	94.0	Ref
			104		104.0	±0.3
			114		114.0	±0.3

Time Weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	1000	94.0	Ref
		Slow			94.0	±0.3

Room 422,Leader Industrial Centre,57-59 Au Pui Wan Street ,Fo Tan, Shatin,N.T.,Hong Kong
Tel: (852) 2668 3423 Fax:(852) 2668 6946
Homepage: http://www.aa-lab.com E-mail : inquiry@aa-lab.com

Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dB SPL	Fast	94	31.5	94.0	±2.0
				63	94.1	+1.5
				125	94.1	±1.5
				250	94.0	±1.4
				500	94.0	±1.4
				1000	94.0	Ref
				2000	93.8	±1.6
				4000	93.8	±1.6
				8000	92.7	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	31.5	54.8	-39.4 ±2.0
				63	67.9	-26.2 ±1.5
				125	78.0	-16.1 ±1.5
				250	85.4	-8.6 ±1.4
				500	90.8	-3.2 ±1.4
				1000	94.0	Ref
				2000	95.1	+1.2 ±1.6
				4000	94.8	+1.0 ±1.6
				8000	91.6	-1.1+2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBC SPL	Fast	94	31.5	91.0	-3.0 ±2.0
				63	93.2	-0.8 ±1.5
				125	93.9	-0.2 ±1.5
				250	94.0	-0.0 ±1.4
				500	94.0	-0.0 +1.4
				1000	94.0	Ref
				2000	93.7	-0.2 ±1.6
				4000	93.0	-0.8 ±1.6
				8000	89.7	−3.0 +2.1; −3.1

Room 422,Leader Industrial Centre,57-59 Au Pui Wan Street ,Fo Tan, Shatin,N.T.,Hong Kong
Tel: (852) 2668 3423 Fax:(852) 2668 6946
Homepage: http://www.aa-lab.com E-mail : inquiry@aa-lab.com

5. *Calibration Results Applied*

The results apply to the particular unit-under-test only. All calibration points are within manufacture's specification as IEC 61672 Class 1.

Uncertainties of Applied Value:

94 dB	31.5 Hz	± 0.05
	63 Hz	± 0.05
	125 Hz	+ 0.10
	250 Hz	± 0.10
	500 Hz	± 0.10
	1000 Hz	± 0.05
	2000 Hz	± 0.05
	4000 Hz	± 0.10
	8000 Hz	± 0.10
104 dB	1000 Hz	± 0.05
114 dB	1000 Hz	± 0.05

The uncertainties are evaluated for a 95% confidence level.

Note:
The values given in this certification only related to the values measured at the time of the calibration and any uncertainties quoted will not allow for the equipment long-term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the calibration. (A+A)*L shall not be liable for any loss or damage resulting from the use of the equipment.

Room 422,Leader Industrial Centre,57-59 Au Pui Wan Street ,Fo Tan, Shatin,N.T.,Hong Kong
Tel: (852) 2668 3423 Fax:(852) 2668 6946
Homepage: http://www.aa-lab.com E-mail : inquiry@aa-lab.com

MAXLAB

CALIBRATION CERTIFICATE

Certificate Information

Date of Issue	23-Nov-2018	**Certificate Number**	MLCN182934S

Customer Information

Company Name	Acuity Sustainability Consulting Limited
Address	Unit 1908, Nos. 301-305 Castle Peak Road, Kwai Chung, N.T.

Equipment-under-Test (EUT)

Description	Sound Level Calibrator
Manufacturer	Rion
Model Number	NC-74
Serial Number	34504770
Equipment Number	--

Calibration Particular

Date of Calibration	23-Nov-2018		
Calibration Equipment	4231(MLTE008) / AV180068 / 13-May-20 1357(MLTE190) / MLEC18/05/02 / 25-May-19		
Calibration Procedure	MLCG00, MLCG15		
Calibration Conditions	Laboratory	Temperature	23 °C ± 5 °C
		Relative Humidity	55% ± 25%
	EUT	Stabilizing Time	Over 3 hours
		Warm-up Time	Not applicable
		Power Supply	Internal battery
Calibration Results	Calibration data were detailed in the continuation pages. Calibration result was out of EUT specification.		

Approved By & Date

K.O. Lo 23-Nov-2018

Statements

* Calibration equipment used for this calibration are traceable to national / international standards.
* The results on this Calibration Certificate only relate to the values measured at the time of the calibration and the uncertainties quoted will not include allowance for the EUT long term drift, variation with environmental changes, vibration and shock during transportation, overloading, mishandling, misuse, and the capacity of any other laboratory to repeat the measurement.
* MaxLab Calibration Centre Limited shall not be liable for any loss or damage resulting from the use of the EUT.
* The copy of this Certificate is owned by MaxLab Calibration Centre Limited. No part of this Certificate may be reproduced without the prior written approval of MaxLab Calibration Centre Limited.

萬儀校正中心有限公司
MaxLab Calibration Centre Limited
香港新界葵涌華星街 16-18 號保盈工業大廈 9 樓 B2 室
Unit B2, 9/F., Boldwin Industrial Bldg., 16-18 Wah Sing Street, Kwai Chung, N.T., Hong Kong Tel: (852) 2116 1380 Fax: (852) 2264 6480 Email: info@maxlab.com.hk

MAXLAB

Certificate No. MLCN182934S

Calibration Data				
EUT Setting	**Standard Reading**	**EUT Error from Setting**	**Calibration Uncertainty**	**EUT Specification**
94 dB	94.0 dB	0.0 dB	0.20 dB	± 0.3 dB

- END -

Calibrated By : Dan
Date : 23-Nov-18

Checked By : K.O. Lo
Date : 23-Nov-18

萬儀校正中心有限公司
MaxLab Calibration Centre Limited
香港新界葵涌華星街 16-18 號保盈工業大廈 9 樓 B2 室
Unit B2, 9/F., Boldwin Industrial Bldg., 16-18 Wah Sing Street, Kwai Chung, N.T., Hong Kong Tel: (852) 2116 1380 Fax: (852) 2264 6480 Email: info@maxlab.com.hk

Appendix J
The Certification of Laboratory with HOKLAS Accredited Analytical Tests

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

11/F., Chung Shun Knitting Centre, 1-3 Wing Yip Street, Kwai Chung, New Territories, Hong Kong
香港新界葵涌永業街1-3號忠信針織中心11樓

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a
為香港認可處執行機關根據認可諮詢委員會建議而接受的

HOKLAS Accredited Laboratory
「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO / IEC 17025 : 2005 – General requirements for the competence
此實驗所符合ISO / IEC 17025 : 2005 –《測試及校正實驗所能力的通用規定》所訂的要求，
of testing and calibration laboratories and it has been accredited for performing specific tests or calibrations as
獲認可進行載於香港實驗所認可計劃《認可實驗所名冊》內下述測試類別中的指定
listed in the HOKLAS Directory of Accredited Laboratories within the test category of
測試或校正工作

Environmental Testing
環境測試

This laboratory is accredited in accordance with the recognised international Standard ISO / IEC 17025 : 2005.
本實驗所乃根據公認的國際標準 ISO / IEC 17025 : 2005 獲得認可。
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory
這項認可資格顯示在指定範疇所需的技術能力及實驗所質量管理體系的運作
quality management system (see joint IAF-ILAC-ISO Communiqué).
(見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報)。

The common seal of the Hong Kong Accreditation Service is affixed hereto by the authority of the HKAS Executive
香港認可處根據認可處執行機關的權限在此蓋上通用印章

CHAN Sing Sing, Terence, Executive Administrator
執行幹事 陳成城
Issue Date : 5 May 2009
簽發日期：二零零九年五月五日

Registration Number : HOKLAS 066
註冊號碼：

Date of First Registration : 15 September 1995
首次註冊日期：一九九五年九月十五日

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

L 000552

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

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

Lot 12, Tam Kon Shan Road, North Tsing Yi, New Territories, Hong Kong
香港新界青衣北担杆山路12路段

has been accepted by the HKAS Executive, on the recommendation of the Accreditation Advisory Board, as a
在認可諮詢委員會的建議下獲香港認可處執行機關接受為

HOKLAS Accredited Laboratory
「香港實驗所認可計劃」認可實驗所

This laboratory meets the requirements of ISO/IEC 17025:2005 and it has been accredited for performing specific tests or calibrations as listed in the scope of accreditation within the test category of

Environmental Testing

此實驗所符合ISO/IEC 17025:2005所訂的要求
並獲認可進行載於認可範圍內下述測試類別中的指定測試或校正工作

環境測試

This accreditation to ISO/IEC 17025:2005 demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (see joint IAF-ILAC-ISO Communiqué).
此項 ISO/IEC 17025:2005 的認可資格證明此實驗所具備指定範疇內所須的技術能力並實施一套實驗所質量管理體系(見國際認可論壇、國際實驗所認可合作組織及國際標準化組織的聯合公報)。

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

WONG Wang-wah, Executive Administrator
執行幹事 黃宏華
Issue Date : 16 July 2014
簽發日期：二零一四年七月十六日

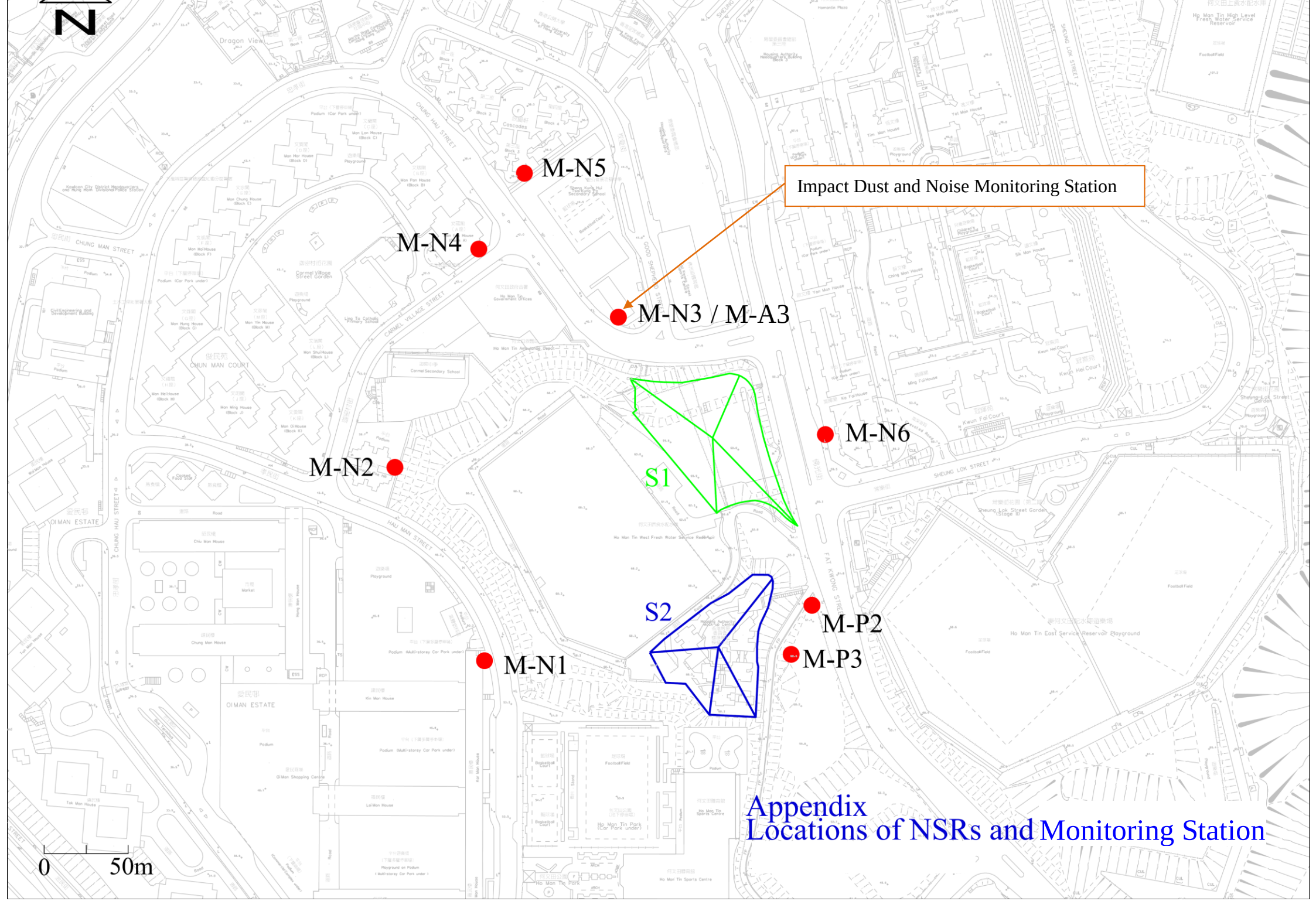
Registration Number : HOKLAS 241
註冊號碼：

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

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

L 001195

Appendix K
Location Plan of Noise and Air Quality Monitoring Station



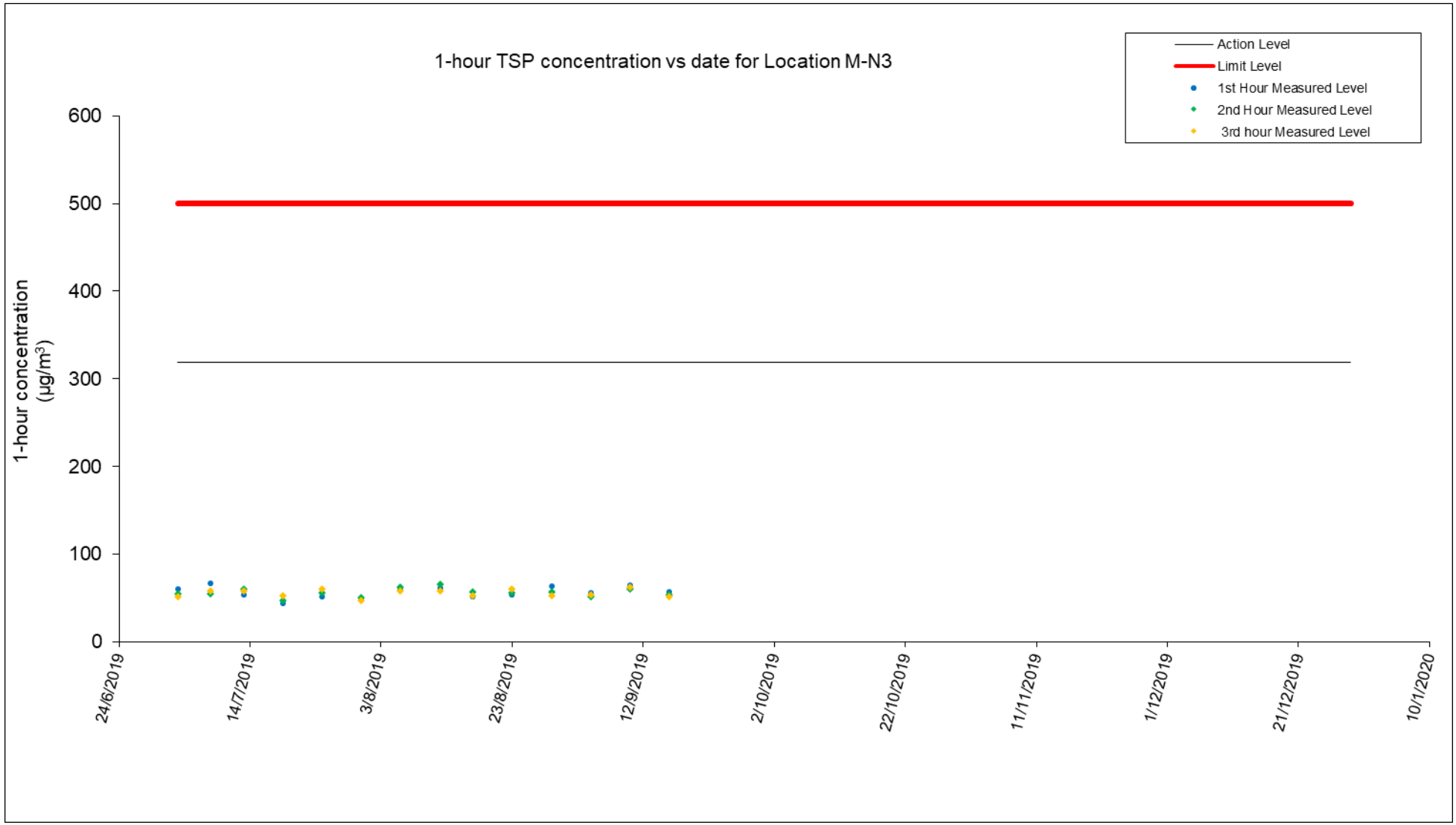
Appendix
Locations of NSRs and Monitoring Station

Appendix L
Monitoring Data (Air Monitoring)

Location:	SKH Tsoi Kung Po Secondary School
Monitoring date:	4, 10, 16 September 2019
Parameter :	TSP 1-hour
Other Factors	Nearby traffic

Date	1-hour TSP (μg/m^3)				
	Weather	**Start Time**	**1st Hour (μg/m^3)**	**2nd Hour (μg/m^3)**	**3rd Hour (μg/m^3)**
4/9/2019	Sunny	10:30	56	52	54
10/9/2019	Sunny	10:50	65	60	63
16/9/2019	Sunny	11:00	57	54	52

Figure 1: Graphical Illustration of Measured 1-hour TSP (μg/m^3) Levels at M-N3



Location: SKH Tsoi Kung Po Secondary School

Monitoring date: 4, 10, 16 September 2019

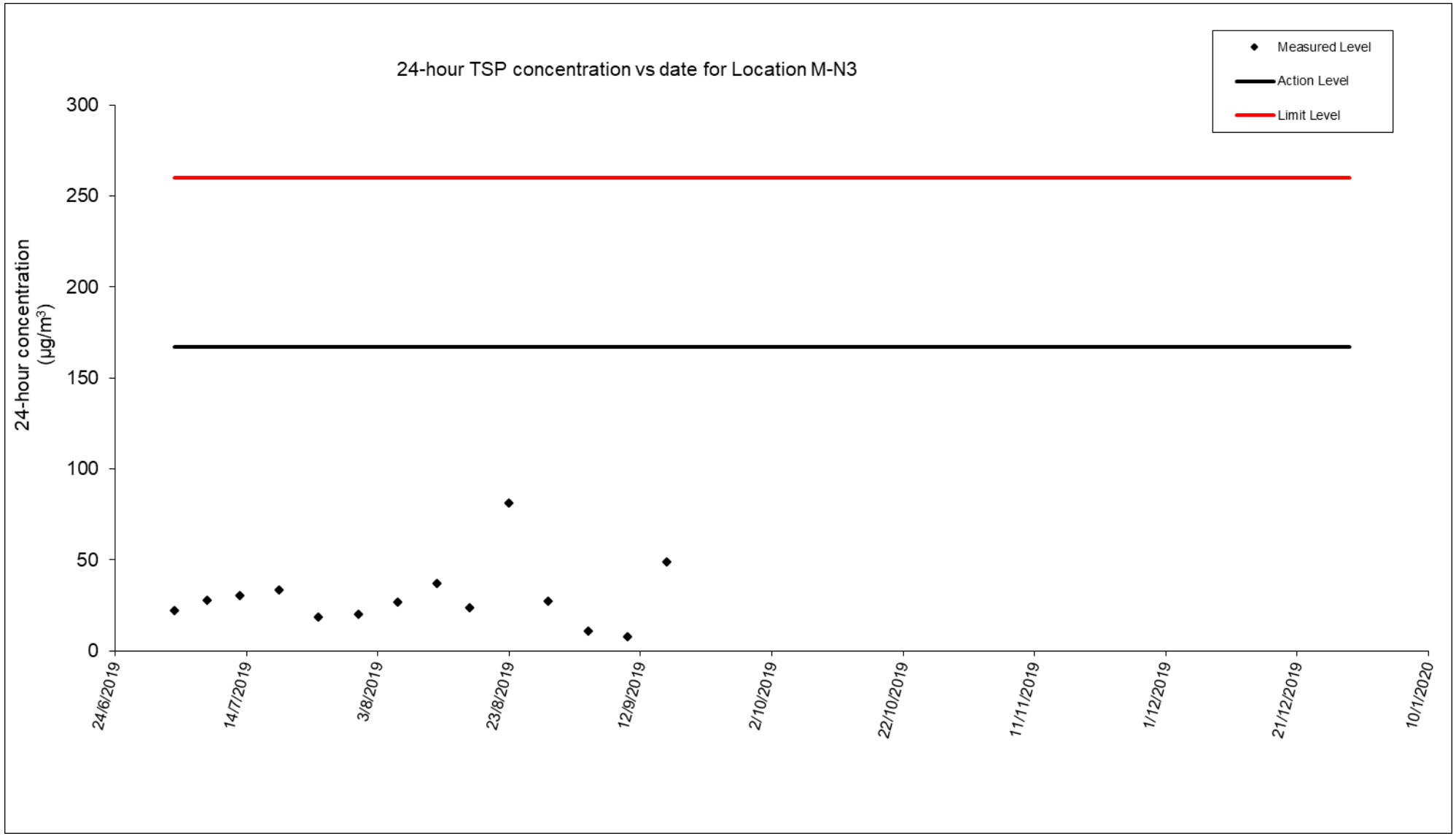
Parameter : TSP 24-hour

Other Factors Nearby Traffic emissions

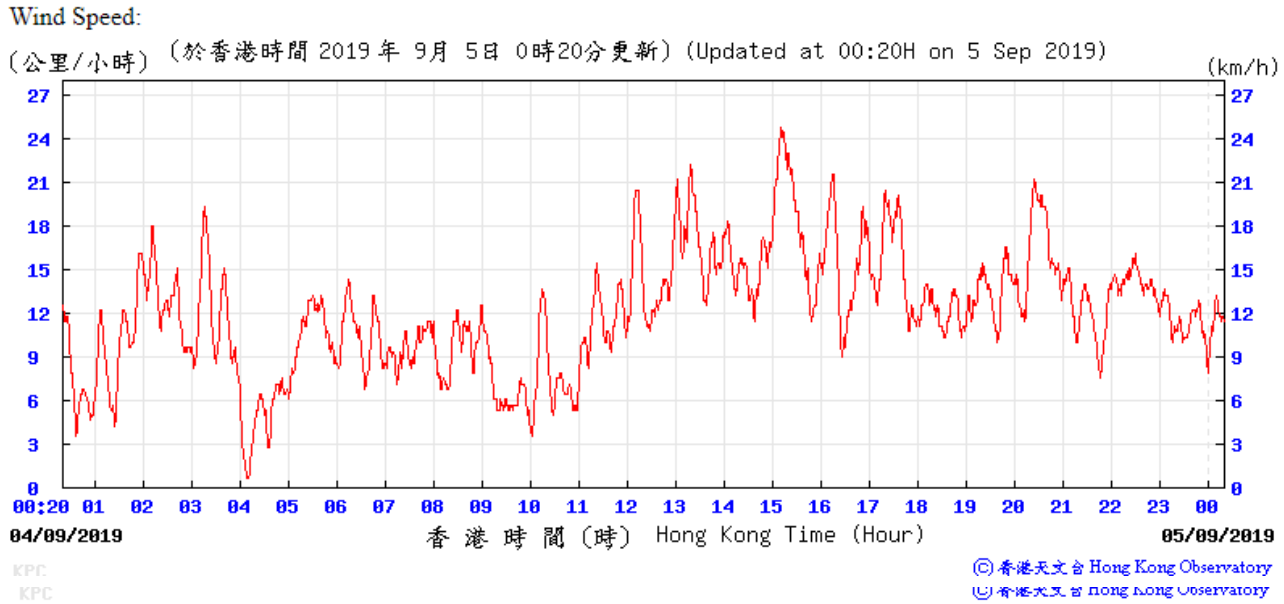
Date of Calibration:	23-Aug-19	Slope =	25.2593
Calibration due date:	7-Sep-19	Intercept =	12.7084
Date of Calibration:	10-Sep-19	Slope =	26.5569
Calibration due date:	25-Sep-19	Intercept =	11.6086

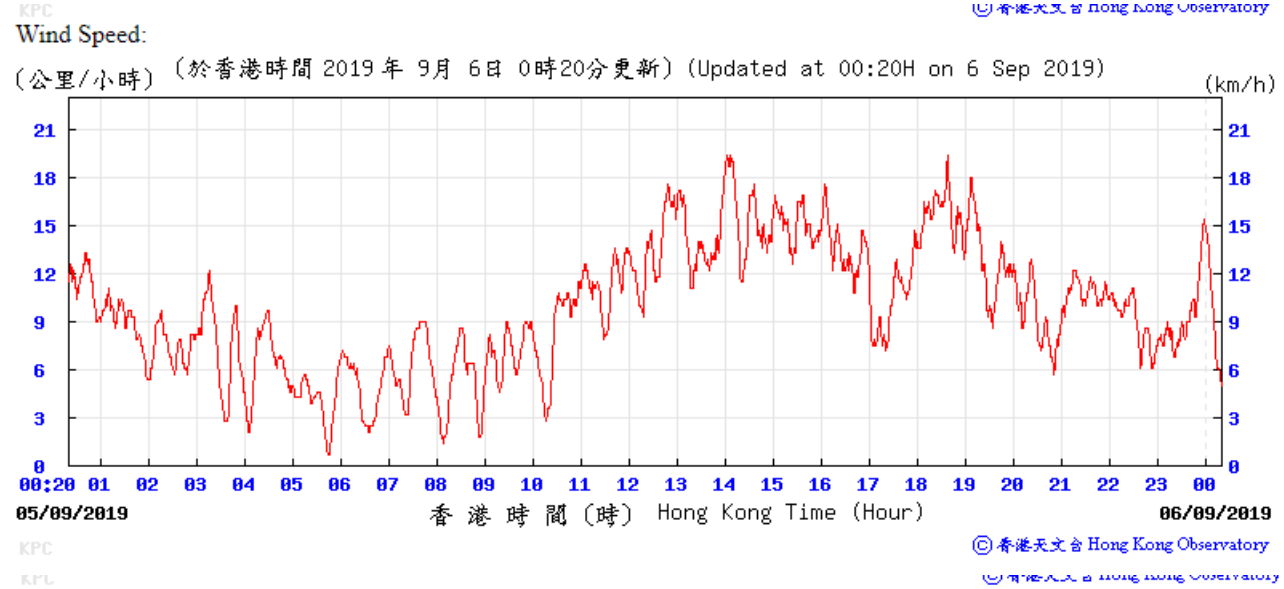
Start Date	Weather Condition	Elapse Time			Chart Reading			Avg Air Temp	Avg Atmospheric Pressure	Flow Rate	Standard Air Volume	Filter Weight (g)		Particulate weight	Conc.
		Initial	Final	Actual (min)	Min	Max	Avg	(°C)	(mm Hg)	(m^3/min)	(m^3)	Initial	Final	(g)	(µg/m^3)
4/9/2019	Sunny	2450.7	2474.7	1440.0	50	51	50.5	26.8	1004.0	2.13	3067	2.6756	2.7094	0.0338	11
10/9/2019	Sunny	2474.9	2498.9	1440.0	51	51	51.0	30.1	1008.9	2.15	3103	2.6705	2.6942	0.0237	8
16/9/2019	Sunny	2499.0	2523.0	1440.0	49	51	50.0	29.3	1007.7	2.04	2940	2.7003	2.8431	0.1428	49

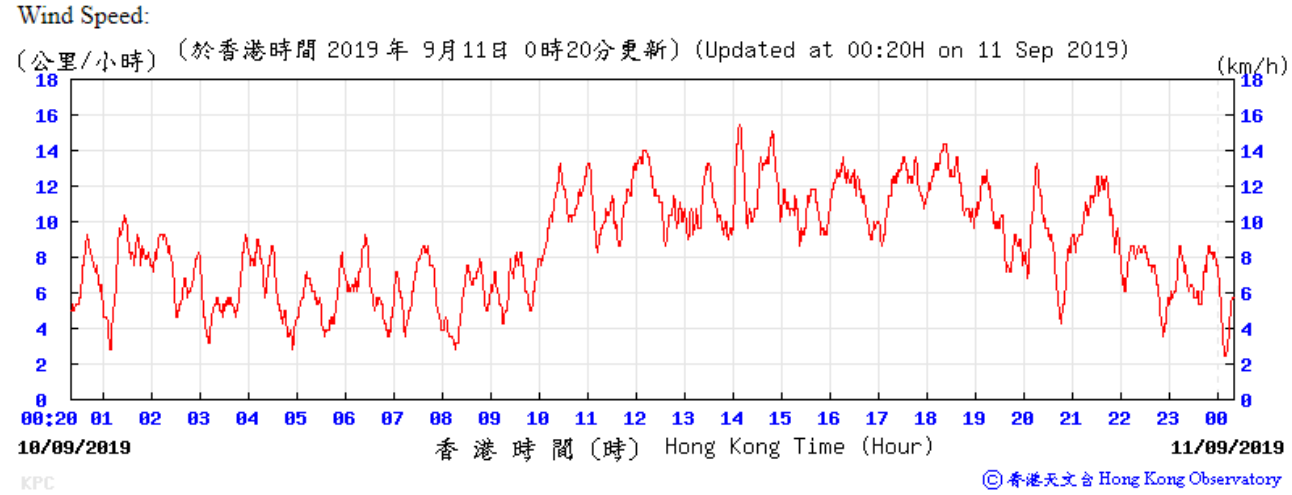
Figure 2: Graphical Illustration of Measured 24-hour TSP (μg/m^3) Levels at M-N3



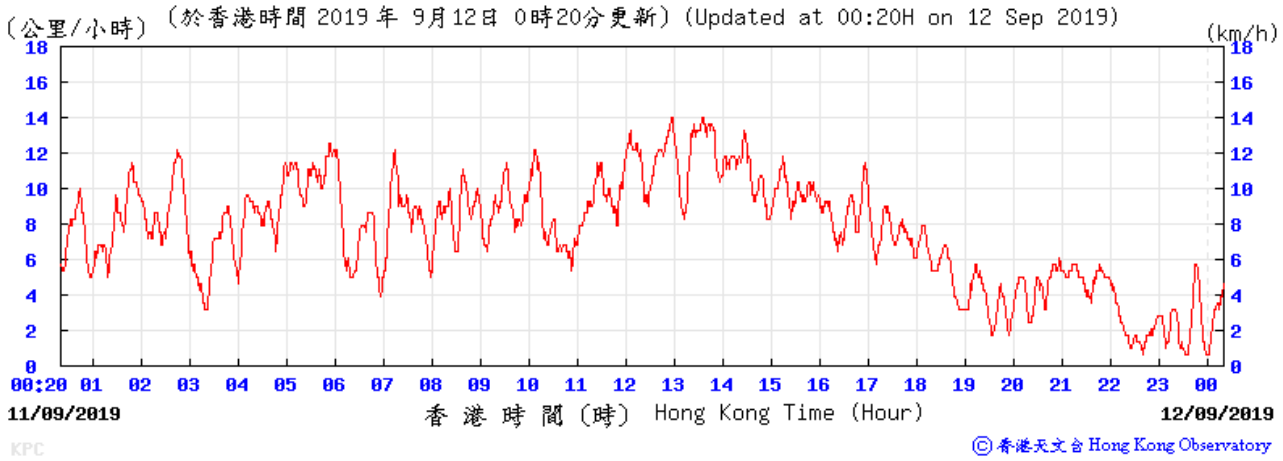
Wind speed data for 4, 5, 10, 11, 16, 17 September 2019



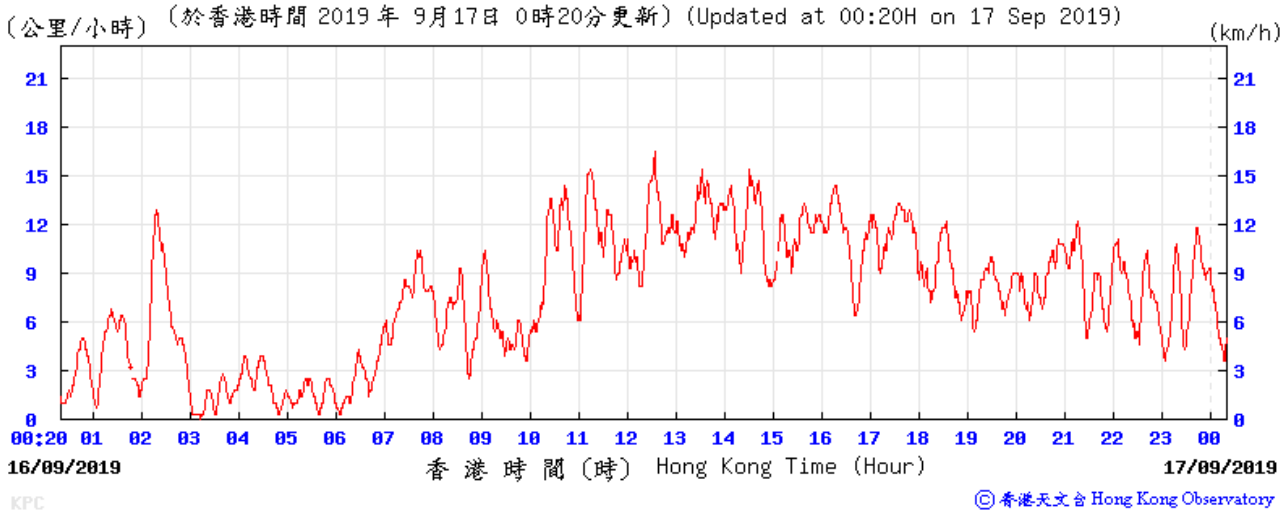




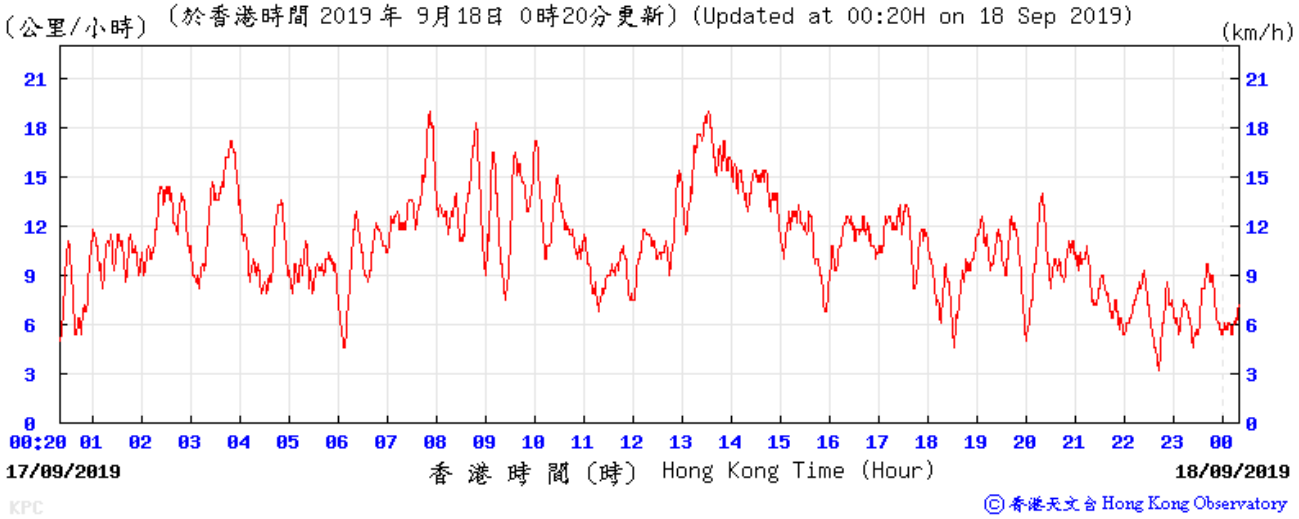
Wind Speed:



Wind Speed:

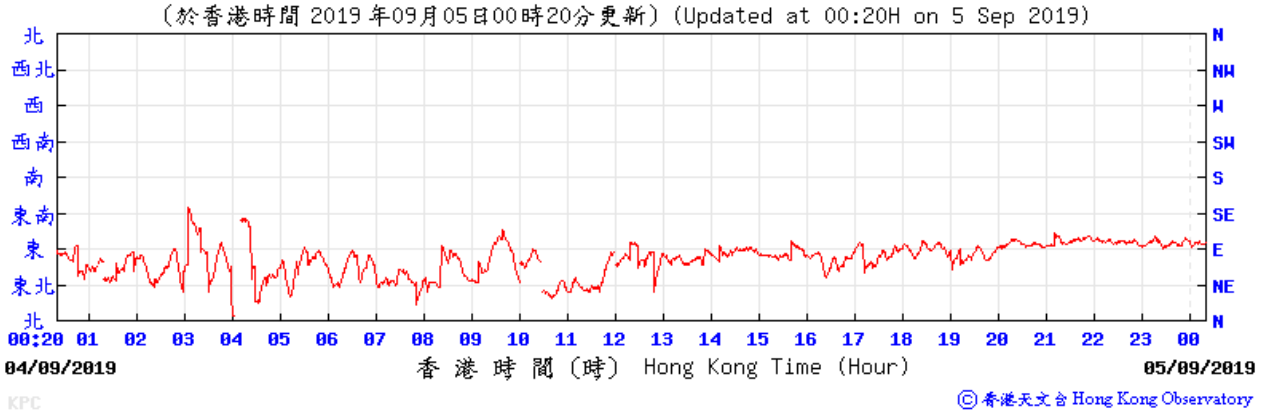


Wind Speed:

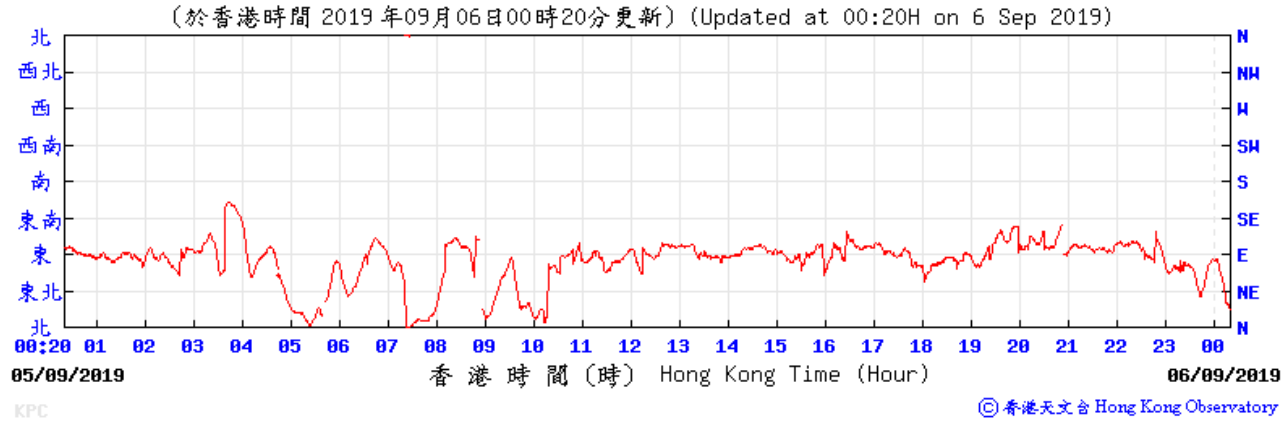


Wind direction data for Wind speed data for 4, 5, 10, 11, 16, 17 September 2019

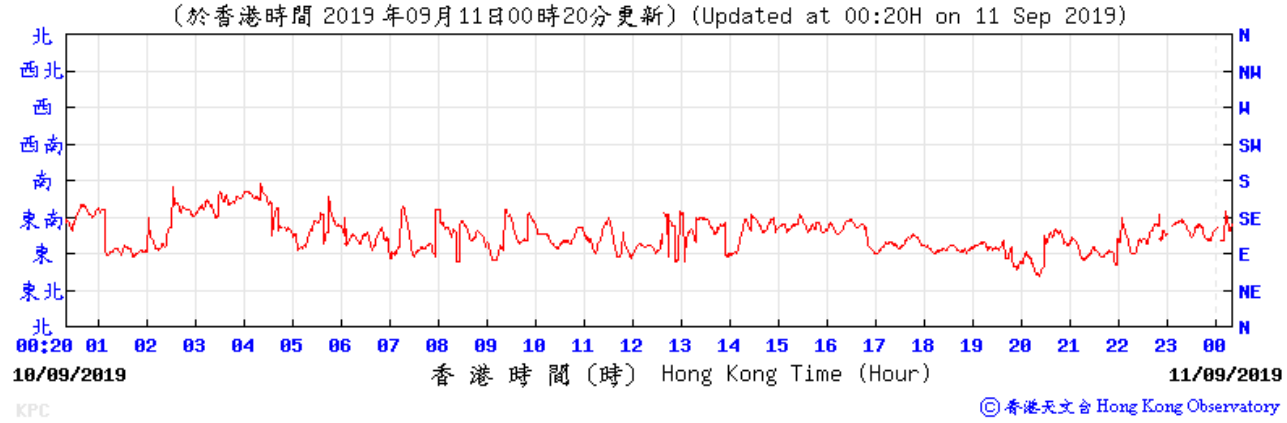
Wind Direction:



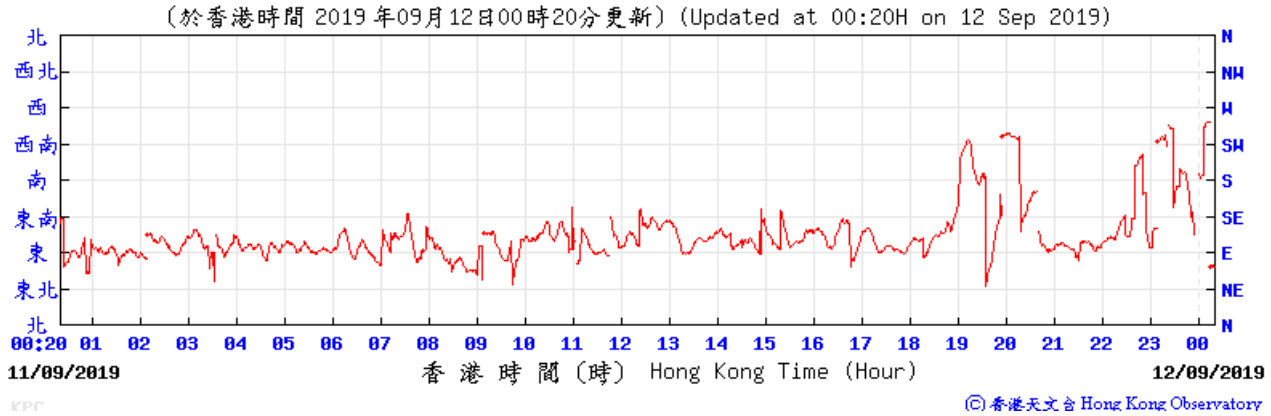
Wind Direction:



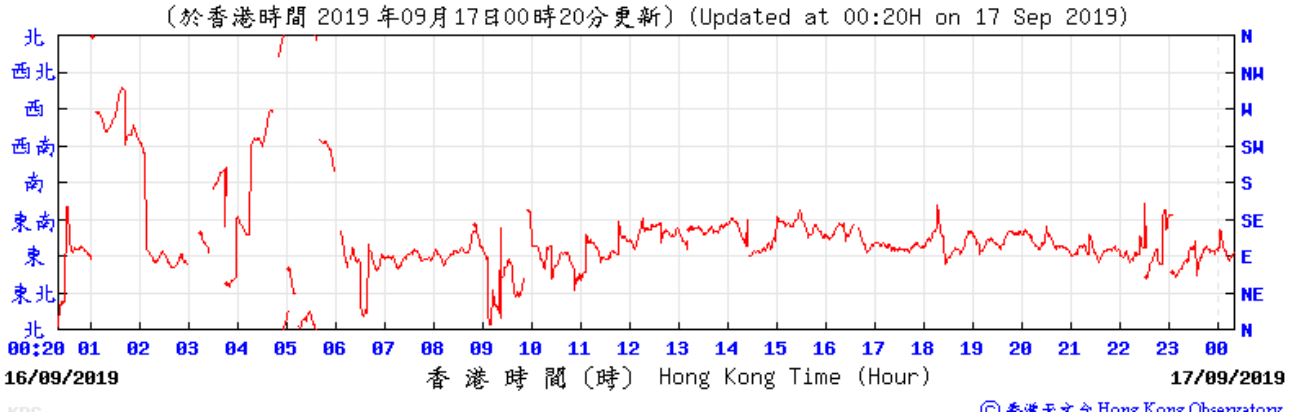
Wind Direction:



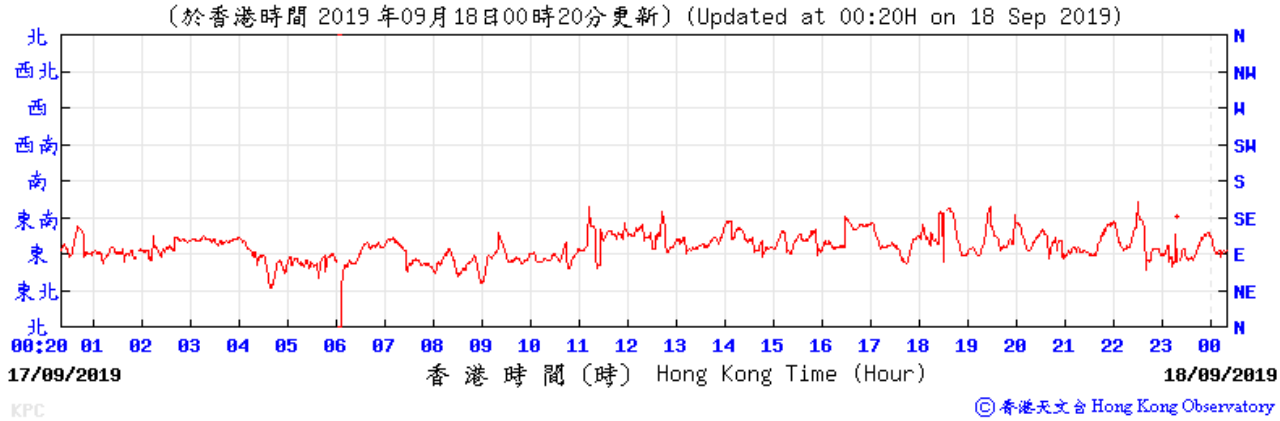
Wind Direction:



Wind Direction:



Wind Direction:



Appendix M
Monitoring Data (Noise)

Location: SKH Tsoi Kung Po Secondary School

Monitoring date: 4, 10, 16 September 2019

Parameter : L_{eq}, L_{10}, L_{90}

Other Factors Nearby traffic

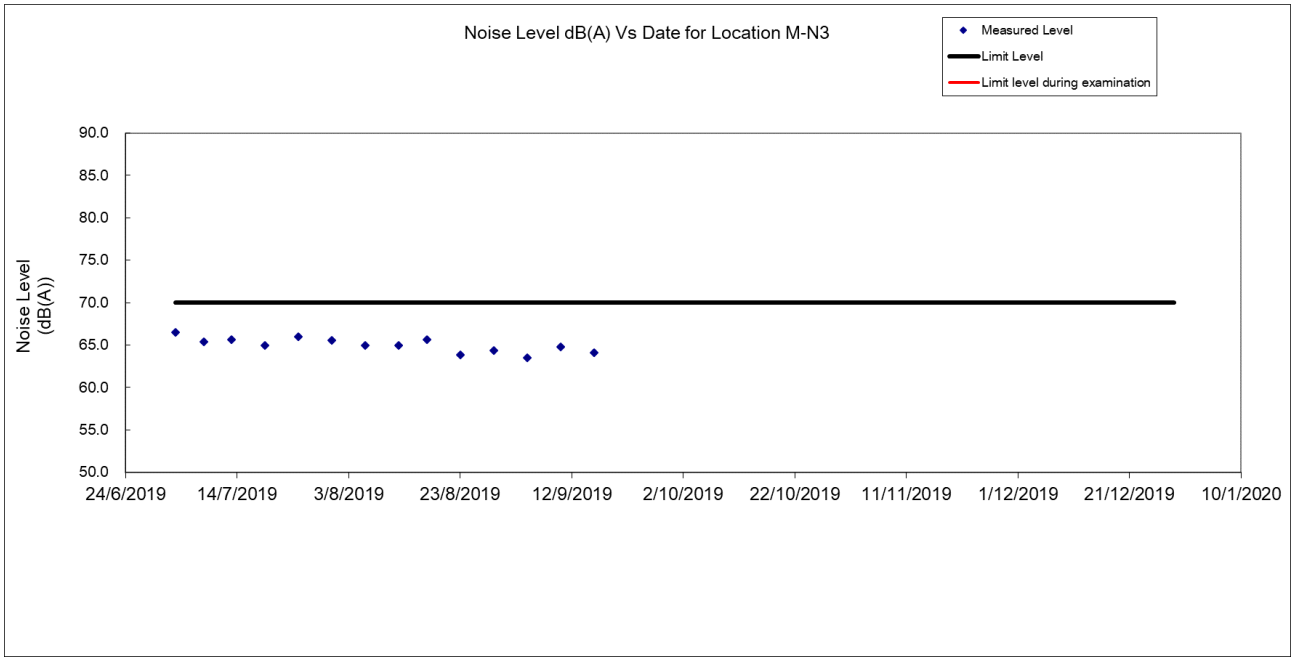
Noise Monitoring data:

Date	Weather	Start Time - End Time	L_{Aeq} *	L_{10}*	L_{90}*	Wind speed (m/s)
4/9/2019	Sunny	10:35 - 11:05	63.5	64.8	60.3	2.3
10/9/2019	Sunny	10:55 - 11:25	64.8	66.3	62.4	2.5
16/9/2019	Sunny	11:05 - 11:35	64.1	65.5	60.9	3.6

Remarks:

1. * Free Field Noise levels were adjusted with a correction of +3 dB(A).

Figure 1: Graphical Illustration of Measured Noise Levels at M-N3



Appendix N
Waste Flow Table

Monthly Summary Waste Flow Table

Name of Department: Highways Department **Contract No. / Works Order No.: HY/2014/09**

Monthly Summary Waste Flow Table for September 2019

[to be submitted not later than the 15th day of each month following reporting month] (All quantities shall be rounded off to 2 decimal places.)

Month	Actual Quantities of Inert Construction Waste Generated Monthly					
	(a)=(b)+(c)+(d)+(e) Total Quantity Generated	(b) Hard Rock and Large Broken Concrete	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed of as Public Fill	Imported Fill
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)
Jan	4.507	0.755	0.000	0.000	3.752	0.000
Feb	5.032	0.242	0.000	0.000	4.790	0.000
Mar	7.887	0.148	0.000	0.000	7.739	0.000
Apr	3.591	0.251	0.000	0.000	3.340	0.000
May	4.927	0.951	0.000	0.465	3.511	0.000
Jun	4.758	1.234	0.000	2.334	1.190	0.000
Sub-total*	30.702	3.581	0.000	2.799	24.322	0.000
Jul	5.552	0.459	0.000	4.859	0.234	0.000
Aug	4.795	0.374	0.000	4.154	0.267	0.000
*Sep	0.042	0.000	0.000	0.000	0.042	0.000
Oct						
Nov						
Dec						
Sub-total*	41.091	4.414	0.000	11.812	24.865	0.000

Month	**Actual Quantities of <u>Non-inert</u> Construction Waste Generated Monthly**								
	Metals		Paper/ cardboard packaging		Plastics		Chemical Waste		Others, e.g. General Refuse disposed at Landfill
	(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in '000m^3)
	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated
Jan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
Feb	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002 0.002 (yard waste for recycle)
Mar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004 0.003 (yard waste for recycle)
Apr	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006
Jun	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010 0.001(yard waste recycle)
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.038
Jul	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002 0.005 (yard waste for recycle)
Aug	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002 0.016 (yard waste for recycle)
*Sep	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015 0.009 (yard waste for recycle)
Oct									
Nov									
Dec									
Total	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.087

Remark: *Construction waste record was provided only for 1-19 September 2019.

Appendix O
Statistics on Complaint, Notifications of Non-compliance, Summons and Successful Prosecutions

Statistical Summary of Exceedances

Air Quality			
Location	**Action Level**	**Limit Level**	**Total**
M-A3	0	0	0
Noise			
Location	**Action Level**	**Limit Level**	**Total**
M-N3	0	0	0

Statistical Summary of Environmental Complaints

Reporting Period	**Environmental Complaint Statistics**		
	Frequency	**Cumulative**	**Complaint Nature**
1 Sep 2019 - 19 Sep 2019	0	1	N/A

Statistical Summary of Environmental Non-compliance

Reporting Period	**Environmental Non-compliance Statistics**		
	Frequency	**Cumulative**	**Details**
1 Sep 2019 - 19 Sep 2019	0	0	N/A

Statistical Summary of Environmental Summons

Reporting Period	**Environmental Summons Statistics**		
	Frequency	**Cumulative**	**Details**
1 Sep 2019 - 19 Sep 2019	0	0	N/A

Statistical Summary of Environmental Prosecution

Reporting Period	**Environmental Prosecution Statistics**		
	Frequency	**Cumulative**	**Details**
1 Sep 2019 - 19 Sep 2019	0	0	N/A