<u>Vol. 4 of 5</u>

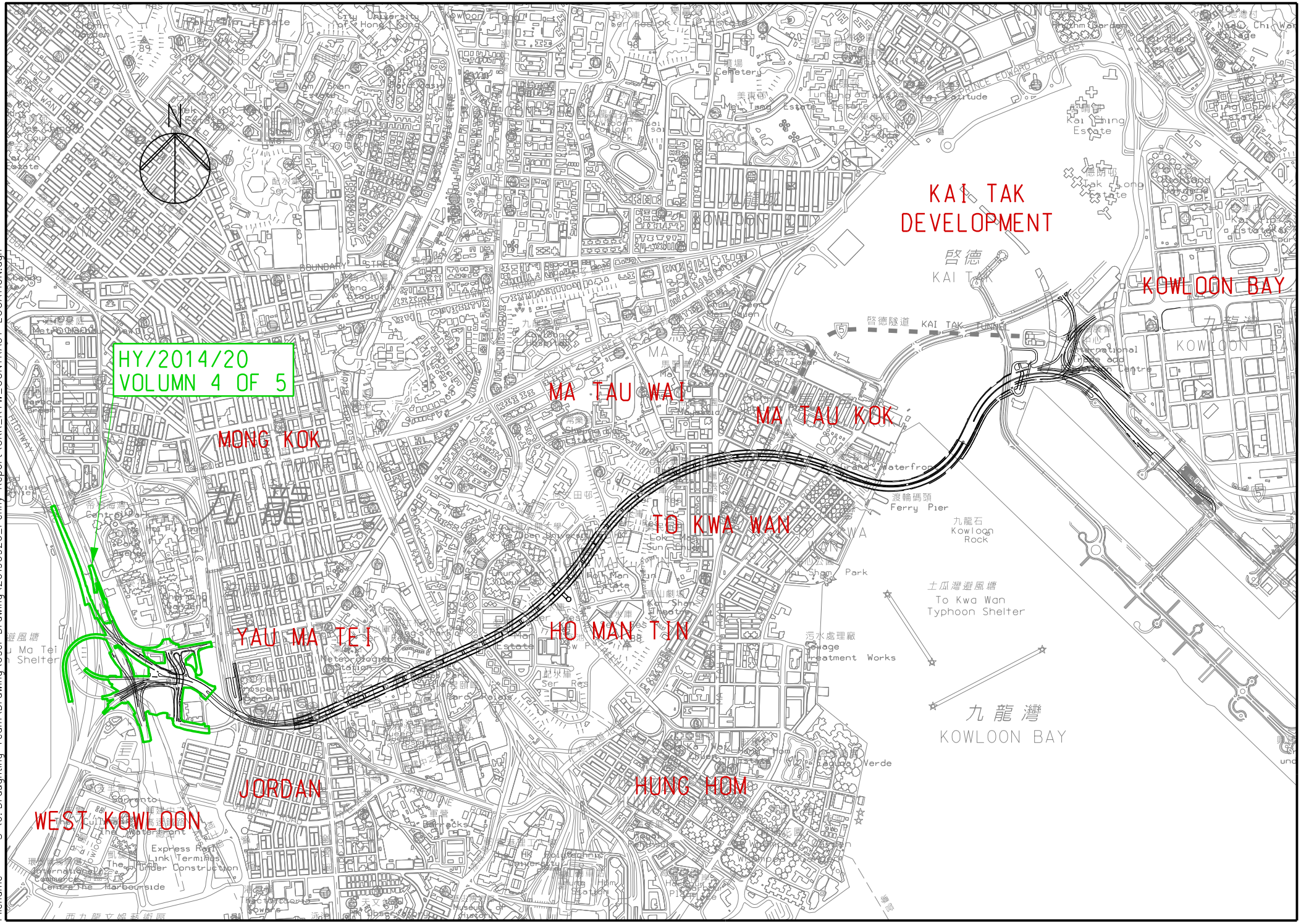
EP-457/2013/C

Central Kowloon Route

Yau Ma Tei West

Contract No. HY/2014/20

June 2020



Printed on : 26-Sep-19 11:47:15 AM by mh.leung
Filename : S:\6. Draughting Team\Drawing\User Drawing\20190926_Penny Report\CKR_KTW_CONTRACT LOCATION.dgn

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:	**Yau Ma Tei West (HY/2014/20)**

Reference Document/Plan

Document/~~Plan~~ to be ~~Certified~~/ Verified:	Monthly EM&A Report No.17 (June 2020)
Date of Report:	9 July 2020 (Rev. 1)
Date received by IEC:	9 July 2020

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.

Mandy To

Ms Mandy To Date: 10 July 2020

Independent Environmental Checker

Our ref: 0436942_IEC Verification Cert_YMTW_Monthly EM&A Rpt No.17.docx

Acuity Sustainability Consulting Limited
Unit C, 11/F, Ford Glory Plaza, No. 37-39 Wing Hong Street
Cheung Sha Wan, Kowloon, H.K.
Tel.: (852) 2698 6833 Fax.: (852) 2333 1316

Build King - SKEC Joint Venture

Central Kowloon Route Contract HY/2014/20

Section of Yau Ma Tei West Section

Monthly EM&A Report No. 17

(Period from 1 to 30 June 2020)

Rev. 1

(9 July 2020)

	Name	Signature
Prepared by	Sally H.S. Mok (Assistant Environmental Consultant)	
Checked & Reviewed by	Nelson T. H. Tsui (Senior Environmental Consultant)	
Approved & Certified by	Kevin W. M. Li (Environmental Team Leader)	

TABLE OF CONTENTS

EXECUTIVE SUMMARY

1. BASIC PROJECT INFORMATION 6

2. ENVIRONMENTAL STATUS 8

3. MONITORING RESULTS 11

4. SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND PROSECUTIONS 19

5. EM&A SITE INSPECTION 20

6. FUTURE KEY ISSUES 22

7. CONCLUSION AND RECOMMENDATIONS 23

LIST OF APPENDICES

A. Alignment and Works Area for the Contract No. HY/2014/20
B. Construction Programme
C. Project Organization Chart
D. Dust Event-Action Plan (EAP)
E. Noise Event-Action Plan (EAP)
F. Environmental Mitigation Implementation Schedule (EMIS)
G. Monitoring Schedules of the Reporting Month
H. Calibration Certificate (Air Monitoring)
I. Calibration Certificate (Noise)
J. The Certification of Laboratory with HOKLAS Accredited Analytical Tests
K. Location Plan of Noise and Air Quality Monitoring Station
L. Monitoring Data (Air Monitoring)
M. Monitoring Data (Noise)
N. Waste Flow Table
O. Statistics on Complaint, Notifications of Summons and Successful Prosecutions
P. Monitoring Schedule of the Coming Month

EXECUTIVE SUMMARY

A.1 Build King – SKEC Joint Venture ("Contractor") commenced the construction works of Highway Department (HyD) Central Kowloon Route Contract No. HY/2014/20 – Section of Yau Ma Tei West ("The Project") on 12 February 2019. This is the 17th monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 June 2020 to 30 June 2020.

A.2 A summary of the construction works reported by Main Contractor for the Project during the reporting month is listed below.

Construction Activities undertaken

- Pre-drilling Works at Portion 1B, 1D, 1E and 1F
- Tree Felling at Portion 1B and 1E
- Socket H-pile at Portion 1B, 1E, 1F and 1G
- Excavation and Lateral Support (ELS) and Excavation for Vent Adit Construction Ch 0-60 at Portion 9
- Pipe Pile at D-wall and Vent Adit (Ch-250~280) at Portion 1D, 1F and 10
- King Post at D-wall Area at Portion 1F
- Jacking Pit Construction of Sewerage System at Portion 1B
- Watermain Installation at new pipe sleeve (pipe jacking) at Portion 1B
- ELS and Excavation Works for Pile Cap Construction at Bridge G (GP1, GP2, GP3 & Abutment G) at Portion 1B
- Pipe Cap and pier Construction at Bridge G including Abutment G at Portion 1B
- ELS and Excavation Works at Bridge B2/C2 (C2P1, C2P2 and B2P1) at Portion 1E
- Pipe Cap and pier Construction at Bridge B2/C2 (C2P1, C2P2 an B2P1) at Portion 1E

A.3 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	
W-N1A, W-N18, W-N25A, W-P11	5 times
Construction dust (24-hour TSP) monitoring	
W-A1	5 times
W-A6	5 times
Construction dust (1-hour TSP) monitoring	
W-A1,W-A6	15 times

A.4 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 4, 18 June 2020. Details of the audit findings and implementation status are presented in Section 5.

A.5 Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET on 4, 11, 18, 24 June 2020. One joint site inspection with IEC also undertaken on 18 June 2020. Details of the audit findings and implementation status are presented in Section 5.

A.6 Details of waste management are presented in Section 3.

A.7 No exceedance of the Action and Limit Levels of 24-hour TSP and 1-hour TSP and construction noise monitoring were recorded during the reporting period.

A.8 No compliant or non-compliance was reported in the reporting month.

A.9 No notification of summon or prosecution was received in this reporting period.

A.10 A summary of the construction activities provided by Main Contractor in the next reporting month is listed below:

Construction Activities to be undertaken
• Tree Felling at Portion 1B, 1E • Socket H-Pile at Portion 1B, 1E, 1F and 1G • Removal of existing Steel Bridge at Portion 1B, 1E and 1G • Reinforced Concrete(RC) works for Vent Adit at Ch 0~60 (partial only) at Portion 0 • Pipe Pile Installation at D-wall and Vent Adit (CH 250~280) at Portion 1D, 1F and 10 • Jacking Pit construction of Sewerage System at Portion 1B • Watermain Installation at newly installed Pipe Sleeves at Portion 1B • Pile Cap and Pier Construction at Bridge G including Abutment G at Portion 1B • Pile Cap and Pier Construction at Bridge B2/C2 (C2P1, C2P2, B2P1) at Portion 1E

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 construction of the CKR had been divided into different sections. This Contract No. HY/2014/20 – Section of Yau Ma Tei West (YMTW) covers part of the construction activities located at Yau Ma Tei under the EP which includes:

- Section of Yau Ma Tei West

i. Construction of an approximately 250m long Depressed Road at the western tunnel portal of CKR;

ii. Construction of a Landscaped Deck structure above the western tunnel portal and Hoi Wang Road, including the associated civil engineering provisions and coordination with CKR-RMW contractor in respect of the remaining works for the Landscaped Deck;

iii. Construction of an underground Ventilation Adit connecting the tunnel ventilation system with the Yau Ma Tei Ventilation Building;

iv. Construction of approach roads and slip roads, including bridges and other associated structures, connecting CKR with the existing road networks:

- Bridge B
- Bridge C
- Bridge D
- Bridge G
- Road D Structure
- Box Structure E
- Diversion of a section of existing drainage box culvert of approximately 215m in length;

v. Design and construction of the noise mitigation measures at Slip Roads A, C2, D, E, G, Hoi Wang Road, Lai Cheung Road and Lin Cheung Road;

vi. Design and construction of Smoke Ventilation System including Smoke Ventilator System including Smoke Ventilator System, Linear Heat Detection System, Pneumatic Air Supply System, the associated plant rooms, control system and power supply system for part of the Landscaped Deck;

vii. Design and construction of the façade system of the Landscaped Deck;

viii. Design and construction of lifts at the Landscaped Deck;

ix. Associated roadworks, footpath, drainage, sewerage, watermains, street lighting, traffic aids, landscaping, electrical and mechanical works, instrument monitoring works and utility diversion works;

x. Construction of civil engineering provisions and coordination with future tunnel E&M and TCSS contractor for installation of tunnel E&M and TCSS equipment;

The alignment and works area for the Contract No. HY/2014/20 - are shown in Appendix A.

1.4. 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 reported by Main Contractor during the Reporting Month.

Construction Activities undertaken
• Pre-drilling Works at Portion 1B, 1D, 1E and 1F
• Tree Felling at Portion 1B and 1E
• Socket H-pile at Portion 1B, 1E, 1F and 1G
• ELS and Excavation for Vent Adit Construction Ch 0-60 at Portion 9
• Pipe Pile at D-wall and Vent Adit (Ch-250~280) at Portion 1D, 1F and 10
• King Post at D-wall Area at Portion 1F
• Jacking Pit Construction of Sewerage System at Portion 1B
• Watermain Installation at new pipe sleeve (pipe jacking) at Portion 1B
• ELS and Excavation Works for Pile Cap Construction at Bridge G (GP1, GP2, GP3 & Abutment G) at Portion 1B
• Pipe Cap and pier Construction at Bridge G including Abutment G at Portion 1B
• ELS and Excavation Works at Bridge B2/C2 (C2P1, C2P2 and B2P1) at Portion 1E
• Pipe Cap and pier Construction at Bridge B2/C2 (C2P1, C2P2 an B2P1) at Portion 1E

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

1.6. 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 No.	Valid Period		Status	Remark
	From	To		
Environmental Permit				
EP-457/2013/C	23 Apr 2019	End of Project	Valid	-
Wastewater Discharge License				
WT00033736-2019	31 May 2019	31 May 2024	Valid	-
Notification of Construction Works under the Air Pollution Control (Construction Dust) Regulation				
438845	31 Oct 2018	End of Project	Notified	-
Chemical Waste Producer Registration				
WPN5212-229-B2527-02	31 Oct 2018	End of Project	Valid	-
Billing Account for Disposal of Construction Waste				
7032430	2 Nov 2018	End of Project	Valid	-
Construction Noise Permit				
GW-RE0151-20	16 Mar 2020	12 Sep 2020	Valid	Construction Noise Permit for Overtime Lifting, Energy Supply, Dewatering, Bentonite Plant and others
GW-RE0158-20	5 Apr 2020	28 Jun 2020	Valid	Hoi Wang Road Road-Marking Repainting Work
GW-RE0353-20	12 May 2020	11 Aug 2020	Valid	Sign Gantry Modification Works at Yau Ma Tei Area
GW-RE0379-20	17 May 2020	2 Aug 2020	Valid	Detouring Scheme at Hoi Wang Road
GW-RE0381-20	12 May 2020	31 Jul 2020	Valid	Road Marking Works for J4 Modification
GW-RE0390-20	14 May 2020	2 Aug 2020	Valid	Contingency for the Detouring Scheme
GW-RE0387-20	16 May 2020	6 Aug 2020	Valid	Road Marking Modification near Cherry Street
GW-RE0548-20	30 Jun 2020	23 Sep 2020	Valid	Cross Road Ducting at Lai Cheung Road (2nd Resubmission) (TTA Drawing LAICR/027)

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	10 Jan 2019
Condition 2.3	Community Liaison Group	23 Nov 2017
Condition 2.4	Management organisation of the main construction companies	5 Jan 2019
Condition 2.5	Construction Programme and EP Submission Schedule	10 Jan 2019
Condition 2.6	Design Drawing	5 Jan 2019
Condition 2.8	Landscape Mitigation Plan	8 May 2019
Condition 2.9	Construction Noise Mitigation Measure Plan (CNMMP)	3 July 2019
Condition 3.3	Baseline Monitoring Report	24 Jan 2019
Condition 3.4	Monthly EM&A Report (May 2020)	12 Jun 2020

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.

Constructionactivities undertaken	**Remarks on progress**
• Pre-drilling Works at Portion 1B, 1D, 1E and 1F	•96% completion
• Tree Felling at Portion 1B and 1E	•95% completion
• Socket H-pile at Portion 1B, 1D, 1E, 1F and 1G	•42% completion
• ELS and Excavation for Vent Adit Construction Ch 0-60 at Portion 9	•90% completion
• Pipe Pile at at D-wall and Vent Adit (Ch-250~280) at Portion 1D, 1F and 10	•60% completion
• King Post at D-wall Area at Portion 1F	•Completed
• Jacking Pit Construction of Sewerage System at Portion 1B	•45% completion
• Watermain Installation at new pipe sleeve (pipe jacking) at Portion 1B	•20% completion

Constructionactivities undertaken	Remarks on progress
• ELS and Excavation Works for Pile Cap Construction at Bridge G (GP1, GP2, GP3 & Abutment G) at Portion 1B	• Completed
• Pile Cap and Pier Construction at Bridge G including Abutment G at Portion 1B	• 15% completion
• ELS and Excavation Works at Bridge B2/C2 (C2P1, C2P2 and B2P1) at Portion 1E	• Completed
• Pipe Cap and pier Construction at Bridge B2/C2 (C2P1, C2P2 an B2P1) at Portion 1E	• 20% completion

2.1. The drawing showing the 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 and temporary alternative monitoring location are shown in Table 2.3.

Table 2.3 Summary of the location of the monitoring stations

Monitoring Location	Location ID	Latitude	Longitude
Yau Ma Tei Catholic Primary School (Hoi Wang Road)	W-A1/ W-N1A	22.313357	114.16409
Man Cheong Building	W-A6	22.308185	114.166033
Hydan Place	W-N18	22.30858	114.170185
Prosperous Garden Block 1	W-N25A	22.309846	114.168072
The Coronation Tower 1	W-P11	22.309824	114.165616

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 locations in the reporting month.

3.1.2. The sampling frequency of at least once in every 6 days, shall be strictly observed at the monitoring stations 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, Leq (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	LD-5R Digital Dust Indicator	992818	3 Sep 2019
1-hour TSP	LD-5R Digital Dust Indicator	851820	23 Aug 2019
24-hour TSP	TE-5170X High Volume Sampler	1049	28 May, 15 Jun 2020
	TE-5170X High Volume Sampler	1050	28 May, 15 Jun 2020
	TE-5028A Calibration Kit	3702	10 Oct 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-13663-E0	12 Sep 2019
Nti XL2 Sound Level Meter	A2A-13548-E0	10 Jan 2020
Pulsar 105 Acoustic Calibrator	63705	28 Sep 2019

3.3. Monitoring Methodology and QA/QC results

Air Quality

3.3.1. The 1-hour TSP monitor, portable dust meters (Sibata Digital Dust Indicator Model LD-5R) was used for the impact monitoring. The 1-hour TSP meters provides a real time 1-hour TSP measurement based on 90° light scattering. Three 1-hour TSP level were logged per every six days.

3.3.2. The 24-hour TSP monitor, High Volume Samplers (Tisch TE-5170X High Volume Air Sampler) were 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. HVSs 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°C and not varied by more than ±3°C; 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). $L_{Aeq(30mins)}$ 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(A).

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 Locations

Air Quality

3.4.1. During the site visit, both of the original proposed dust monitoring locations were rejected due to the condition at The Coronation was not favorable for monitoring and the access was declined by the management office of Hong Kong Community College (HKCC) of PolyU. Two alternative air monitoring stations Yau Ma Tel Catholic Primary School (Hoi Wang Road) and Man Cheong Building had been proposed by ET and approved by IEC. 2 designated air monitoring locations were identified and agreed with IEC and EPD. Details of air monitoring stations are described in Table 3.3. The location plan of air quality monitoring stations is shown in Appendix K.

Table 3.3 Location of the Dust Monitoring Stations

Air Quality Monitoring Station	Dust Monitoring Station
W-A1	Yau Ma Tei Catholic Primary School (Hoi Wang Road)
W-A6	Man Cheong Building

Noise

3.4.2. During the site visit, one of the original proposed noise monitoring locations Tak Cheong Building was rejected by the president of the owner's corporation. Alternative noise monitoring station Hydan place had been proposed by ET and approved by IEC. 4 noise sensitive receivers designated noise monitoring locations were identified and agreed with IEC and EPD. The designated monitoring stations are identified and access was granted by the premises. The details of noise monitoring station are described in Table 3.4 and the location plan of noise monitoring station is shown in Appendix K.

Table 3.4 Noise Monitoring Stations

Noise Monitoring Station	Identified Noise Monitoring Station	Type of Measurement
W-N1A	Yau Ma Tei Catholic Primary School (Hoi Wang Road)	Façade
W-N18	Hydan Place	Façade
W-N25A	Prosperous Garden Block 1	Façade
W-P11	The Coronation Tower 1	Façade

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
W-A1	Nearby traffic, construction work from West Kowloon Government Offices
W-A6	Nearby traffic

3.6.2. Air quality impact monitoring for the reporting month was carried out on 3, 9 ,15, 20, 26 June 2020 at W-A1 and W-A6

3.6.3. 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)
W-A1	21-59	319	500
W-A6	28-70	306	500

Table 3.8 Summary of 24-hour TSP Monitoring Results

Monitoring Location	Range(μg/m³)	Action Level(μg/m3)	Limit Level(μg/m3)
W-A1	15-26	167	260
W-A6	18-30	166	260

Noise

3.6.4. 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 Stations

Monitoring Station	Major Noise Source
W-N1A	Nearby traffic, construction work from West Kowloon Government Offices, school activities
W-N18	Nearby traffic
W-N25A	Nearby traffic
W-P11	Nearby traffic

3.6.5. The construction noise impact monitoring for the reporting month was carried out on 3, 9, 15, 20, 26 June 2020. The measurement data are shown in Appendix M and summarized in Tables 3.10:

Table 3.10 Summary of Noise Monitoring Results

Time Period	Monitoring location	Parameter	Range, dB(A)				
			L_{eq}	L_{10}	L_{90}	Action Level	Limit Level#
Normal working hour from 0700-1900	W-N1A	$L_{eq\ 30min}$	61.1-62.1	62.4-64.5	57.6-59.5	When one documented complaint is received	70dB(A) or 65 dB(A) during examination
	W-N18		68.9-71.8	71.6-73.9	66.6-69.8		75dB(A)#
	W-N25A		68.0-70.5	70.4-72.1	66.0-68.6		
	W-P11		68.3-69.3	69.8-71.2	63.6-66.7		

Remarks: 1. # If works are to be carried out during restricted hours, the conditions in the construction noise permit by the Noise Control Authority have to be followed.

Waste management

3.6.6. The waste generated from this Project includes inert 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 ‘tonnes)	Chemical Waste (in‘000 Kg)	Non-inert C&D Materials			
			Others, e.g. General Refuse disposed at Landfill (in ‘tonnes)	Recycled materials		
				Paper/card board (in ‘000 Kg)	Plastics (in ‘000 Kg)	Metals (in ‘000 Kg)
Jun-2020	15287.8	0.0	30.2	0.1	0.2	0.0

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.

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

4.4. No compliant or non-compliance was reported in the reporting month.

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

4.6. 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, four (4) site inspections were carried out on 4, 11, 18, 24 June 2020, along with bi-weekly inspection of the implementation of landscape and visual mitigation measures conducted on 4, 18 June 2020.

5.2. One joint site inspection with IEC also undertaken on 18 June 2020. Minor deficiency was observed during weekly 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
4 June 2020	1. Missing drip tray for chemical containers was observed in Portion 1F. 2. Missing NRMM labels were observed in Portion 1F.	1. Chemicals in concern were removed from site. 2. Label was replaced.
11 June 2020	1. Colour of NRMM label for an excavator was observed to be faded in Portion 1D. 2. Chemical containers were observed to be stored without drip tray. Drip tray has to be provided in Portion 1E.	1. Label was replaced. 2. Chemicals in concern were removed from site.
18 June 2020	No major observation was found.	-
24 June 2020	1. Drip tray was observed to be missing for chemical containers next to the wet sep in Portion 1F.	1. The concerned chemicals were removed.

5.3. The Contractor had rectified all observation identified during environmental site inspections in the reporting period.

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. Work to be undertaken in the next reporting month are:

- Tree Felling at Portion 1B, 1E
- Socket H-Pile at Portion 1B, 1E, 1F and 1G
- Removal of existing Steel Bridge at Portion 1B, 1E and 1G
- Reinforced Concrete(RC) works for Vent Adit at Ch 0~60 (partial only) at Portion 0
- Pipe Pile Installation at D-wall and Vent Adit (CH 250~280) at Portion 1D, 1F and 10
- Jacking Pit construction of Sewerage System at Portion 1B
- Watermain Installation at newly installed Pipe Sleeves at Portion 1B
- Pile Cap and Pier Construction at Bridge G including Abutment G at Portion 1B
- Pile Cap and Pier Construction at Bridge B2/C2 (C2P1, C2P2, B2P1) at Portion 1E

6.2. Potential environmental impacts arising from the above construction activities are mainly associated with dust, construction noise and waste management.

6.3. The tentative schedule of regular construction noise monitoring, 1-hour TSP and 24-hour TSP monitoring in the next reporting period is presented in Appendix P.

6.4. The construction programme for the Project for the next reporting month is presented in Appendix B.

7. CONCLUSION AND RECOMMENDATIONS

7.1. This 17th monthly EM&A Report presents the EM&A works undertaken during the period from 1 June 2020 to 30 June 2020 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. No exceedance of the Action and Limit Level was recorded for construction noise and air quality impact monitoring during the reporting month.

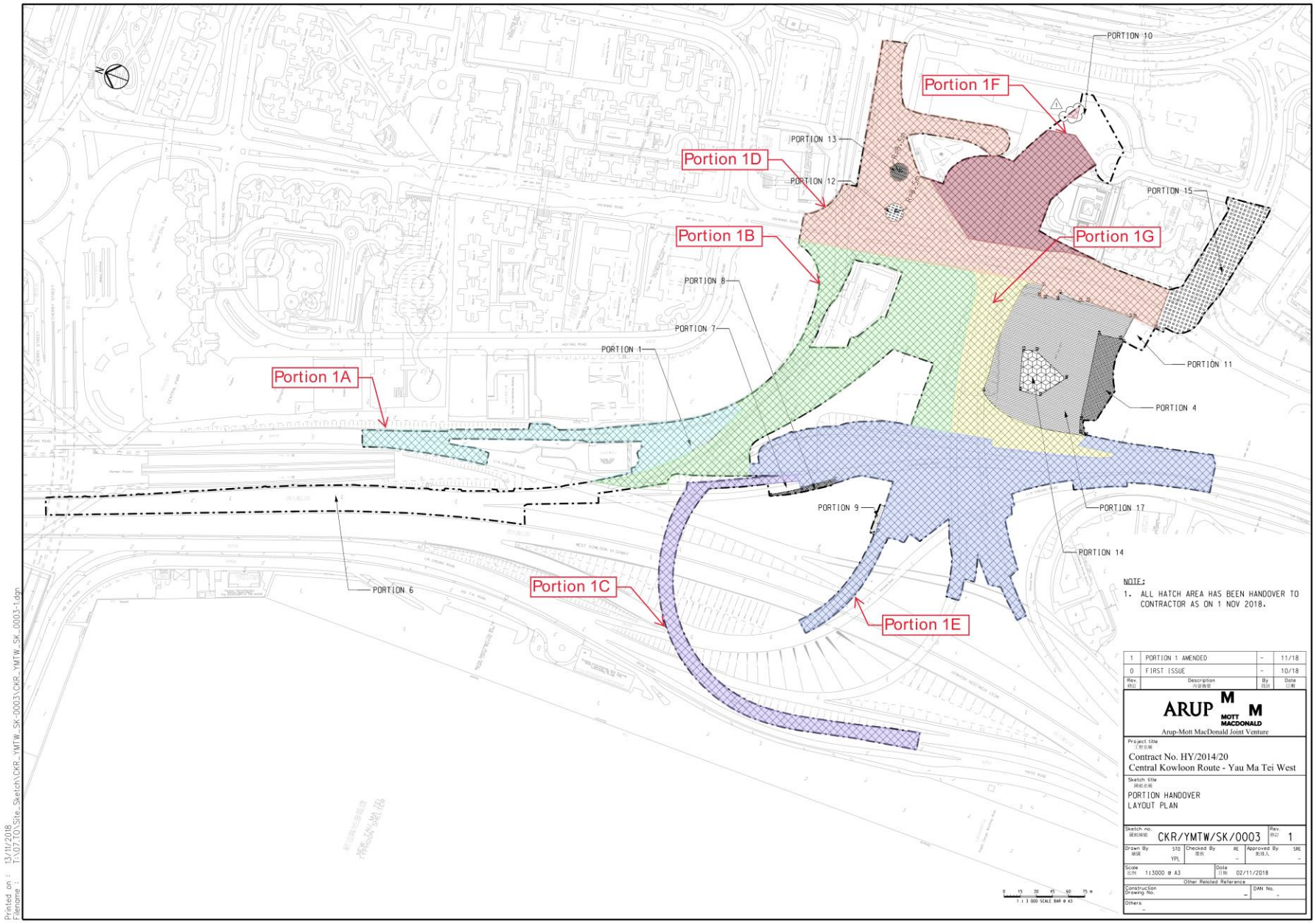
7.3. Weekly environmental site inspections were conducted during the reporting period. Joint site inspection with IEC were carried out on 18 June 2020. Minor deficiency was observed during site inspection and was rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

7.4. No compliant or non-compliance was reported in the reporting month.

7.5. No notification of summons or prosecution was received in the reporting month.

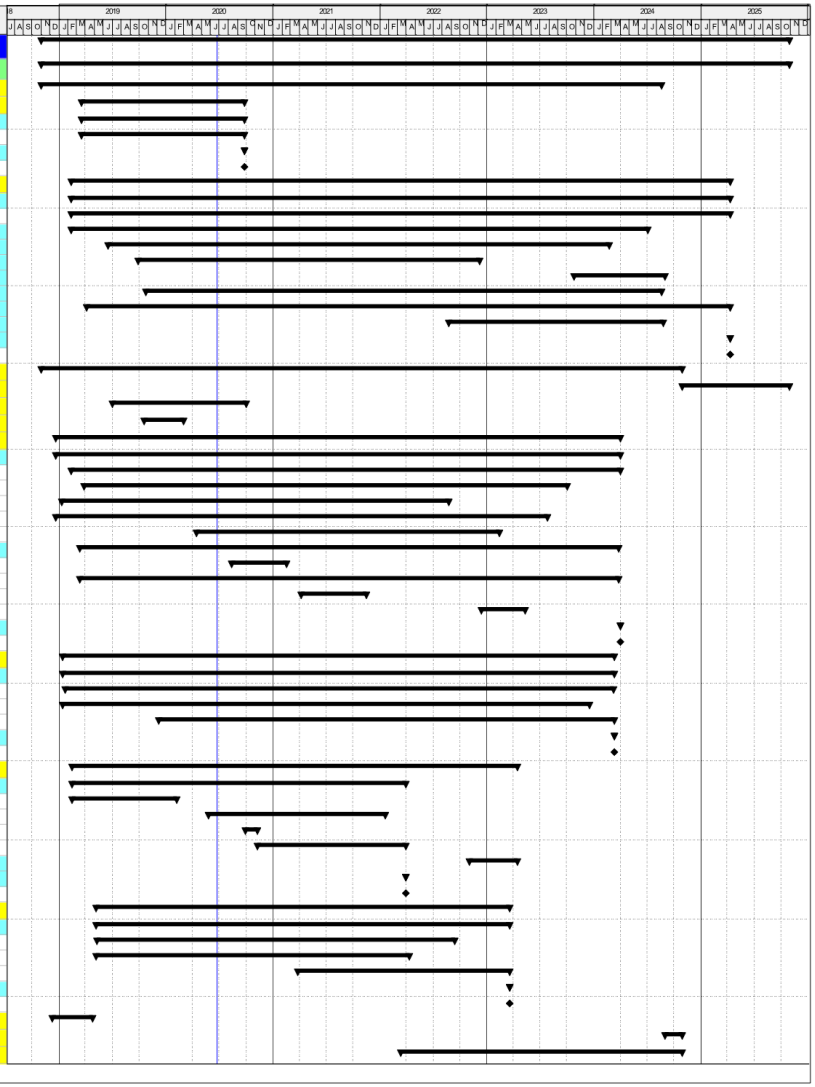
7.6. The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Appendix A
Alignment and Works Area For the Contract No. HY/2014/20


Portion 1A
Portion 1B
Portion 1C
Portion 1D
Portion 1E
Portion 1F
Portion 1G
PORTION 1
PORTION 4
PORTION 6
PORTION 7
PORTION 8
PORTION 9
PORTION 10
PORTION 11
PORTION 12
PORTION 13
PORTION 14
PORTION 15
PORTION 17
NOTE:
1. ALL HATCH AREA HAS BEEN HANDOVER TO CONTRACTOR AS ON 1 NOV 2018.
1 PORTION 1 AMENDED - 11/18
0 FIRST ISSUE - 10/18
Rev. 修訂 Description 內容摘要 By 設計 Date 日期
ARUP
MOTT MACDONALD
Arup-Mott MacDonald Joint Venture
Project title
Contract No. HY/2014/20
Central Kowloon Route - Yau Ma Tei West
Sketch title
PORTION HANDOVER
LAYOUT PLAN
Sketch no. CKR/YMTW/SK/0003
Rev. 1
Drawn By STG YPL
Checked By RE
Approved By SRE
Scale 1:3000 @ A3
Date 02/11/2018
Other Related Reference
Construction Drawing No.
DAN No.
Others
Printed on : 13/11/2018
Filename : T:\07.TO\Site_Sketch\CKR_YMTW_SK_0003\CKR_YMTW_SK_0003-1.dgn

Appendix B
Construction Programme

Activity ID	Activity Name	Original Duration	Early Start	Early Finish
Central Kowloon Route - Yau Ma Tei West		2555	01-Nov-18 A	29-Oct-25
Construction Works		2555	01-Nov-18 A	29-Oct-25
Site Preparation / TTM / Investigation Works / Interface with Other Contractor		2120	01-Nov-18 A	20-Aug-24
Section 1 of the Works - All Structural Works of Ventilation Adit at Portion 9		558	19-Mar-19 A	26-Sep-20
Works at Portion 9		558	19-Mar-19 A	26-Sep-20
Partial Construction of Ventilation Adit (Chainage SOP-1 +0.000 to +60.000)		558	19-Mar-19 A	26-Sep-20
Completion for Section 1 of the Works		0	26-Sep-20	26-Sep-20
CWS1.COMP	KD-1 Completion for Section 1 of the Works	0		26-Sep-20
Section 2 of the Works - All Structural Works including the Operation and Maintenance		2250	11-Feb-19 A	10-Apr-25
Works at Portion 1		2250	11-Feb-19 A	10-Apr-25
Road and Bridges		2250	11-Feb-19 A	10-Apr-25
Lai Cheung Road		1968	11-Feb-19 A	02-Jul-24
Lin Cheung Road		1390	17-Jun-19 A	22-Feb-24
Hoi Wang Road		1167	27-Sep-19 A	06-Dec-22
Construction of Slip Road A		253	26-Oct-23	31-Aug-24
Construction of Slip Road B / B2 and C / C2		1428	25-Oct-19 A	20-Aug-24
Construction of Slip Road D		1782	04-Apr-19 A	10-Apr-25
Outstanding Works at Landscaped Deck after Structural Works		594	24-Aug-22	24-Aug-24
Completion for Section 2 of the Works		0	10-Apr-25	10-Apr-25
CWS2.COMP	KD-2 Completion for Section 2 of the Works	0		10-Apr-25
Section 3 of the Works - Completion of all Preservation and Protection to Existing Trees		2190	01-Nov-18 A	29-Oct-24
Section 4 of the Works - Completion of all Establishment Works		365	30-Oct-24	29-Oct-25
Achievement of Stage A - Excavation and ELS System for Construction at Portion 10		459	02-Jul-19 A	02-Oct-20
Achievement of Stage B - Installation of All Services at Portion 8		141	19-Oct-19 A	29-Feb-20 A
Achievement of Stage C - All Structure Work for Ventilation. Depressed Road, Landscaped Deck		1929	20-Dec-18 A	31-Mar-24
Construction of Western Portal (Segment 1 to 4, 7, & 10 to 12)		1929	20-Dec-18 A	31-Mar-24
Construction of the Vent Adit (CH +207.96 to +240) & Depressed Rd (CH S1L 0+000 to 0+040) - Seg 1&2		1875	12-Feb-19 A	31-Mar-24
Construction of depressed road (CH S1L 0+040 to CH S1L 0+100) - Segment 3 & 4		1339	26-Mar-19 A	03-Oct-23
Construction of Vent Adit (CH+290 to +340) & Depressed Road (CH S1L 0+0.100 to 0+160) - Seg 7		1070	11-Jan-19 A	23-Aug-22
Construction of Vent Adit (CH+340 to +410) & Depressed Road (CH S12L 0+0.060 to 0+120) - Seg 10 & 11		1680	20-Dec-18 A	26-Jul-23
Construction of Vent Adit (CH+410 to +465) & Depressed Road (CH S12L 0+0.000 to 0+060) - Seg 12		840	14-Apr-20 A	11-Feb-23
Construction of Ventilation Adit (under Road D)		1493	12-Mar-19 A	25-Mar-24
Remaining works at ventilation adit (Ch +0 to +60)		152	13-Aug-20	16-Feb-21
Construction of parts of the ventilation adit (CH SOP-1+130 to CH SOP-1 +207.96)		1493	12-Mar-19 A	25-Mar-24
Construction of ventilation adit (CH SOP-1 +90.0 to CH SOP-1 +130)		184	08-Apr-21	16-Nov-21
Construction of the remaining parts of Ventilation Adit (CH SOP-1 +60.0 to CH SOP-1 +90.0)		116	14-Dec-22	10-May-23
Contract Achievement of Stage C		0	31-Mar-24	31-Mar-24
CWSC.COMP	KD-7 Achievement of Stage C	0		31-Mar-24
Achievement of Stage D - Completion of All Civil and Structural Works for Landscaped Deck		1884	14-Jan-19 A	11-Mar-24
Construction for the Remaining Structure of Western Portal		1527	14-Jan-19 A	11-Mar-24
Construction of Realigned Hoi Wang Road (CH S5R 0+000 to CH S5R 0+080) - Segment 5 & 6		1520	21-Jan-19 A	09-Mar-24
Construction of Realigned Hoi Wang Road (Segment 8)		1460	14-Jan-19 A	16-Dec-23
Construction of Realigned Hoi Wang Road (Segment 9)		1261	06-Dec-19 A	11-Mar-24
Contract Achievement of Stage D		0	11-Mar-24	11-Mar-24
CWSD.COMP	KD-8 Achievement of Stage D	0		11-Mar-24
Achievement of Stage E - All works for Diversion of Flow at Drainage Box Culvert B		1520	15-Feb-19 A	14-Apr-23
Works for Box Culvert B		1141	15-Feb-19 A	31-Mar-22
Stage 1 - Construction of part of the proposed box culvert B (CH+150.000 to CH+190.000)		273	15-Feb-19 A	08-Feb-20 A
Stage 2 - Construction of part of box culvert B (CH+70.000 to CH+150.000)-after diversion of HWR		603	24-May-20 A	17-Jan-22
Stage 3 - Diversion of flow from existing Box Culvert B to A - Dry Season		40	29-Sep-20	07-Nov-20
Stage 4 - Construction of remaining proposed box culvert B including Diversion - Dry Season		413	09-Nov-20	31-Mar-22
Ventilation Adit Ch +240 to +250 incl. Reconstruction of Box Culvert A		165	01-Nov-22	14-Apr-23
Contract Achievement of Stage E		0	31-Mar-22	31-Mar-22
CWSE.COMP	KD-9 Achievement of Stage E	0		31-Mar-22
Achievement of Stage F - Completion of all works incl. E&M works to the Slip Road E, F and G		1413	06-May-19 A	18-Mar-23
Works for Slip Road E, F and G		1149	06-May-19 A	18-Mar-23
Construction of the Bridge G (GP1 to GP3 incl. Abutment G)		992	11-May-19 A	13-Sep-22
Construction of the box structure E		872	06-May-19 A	11-Apr-22
Construction of Road work for Slip Road E & F		585	27-Mar-21	18-Mar-23
Contract Achievement of Stage F		0	18-Mar-23	18-Mar-23
CWSF.COMP	KD-10 Achievement of Stage F	0		18-Mar-23
Achievement of Stage H - Completion of Ground Investigation		141	09-Dec-18 A	26-Apr-19 A
Section 5 of the Works - Completion of all Works within Portion 4, 11, 14 and 17		59	01-Sep-24	29-Oct-24
Section 6 of the Works - Completion of Road Works		961	14-Mar-22	29-Oct-24

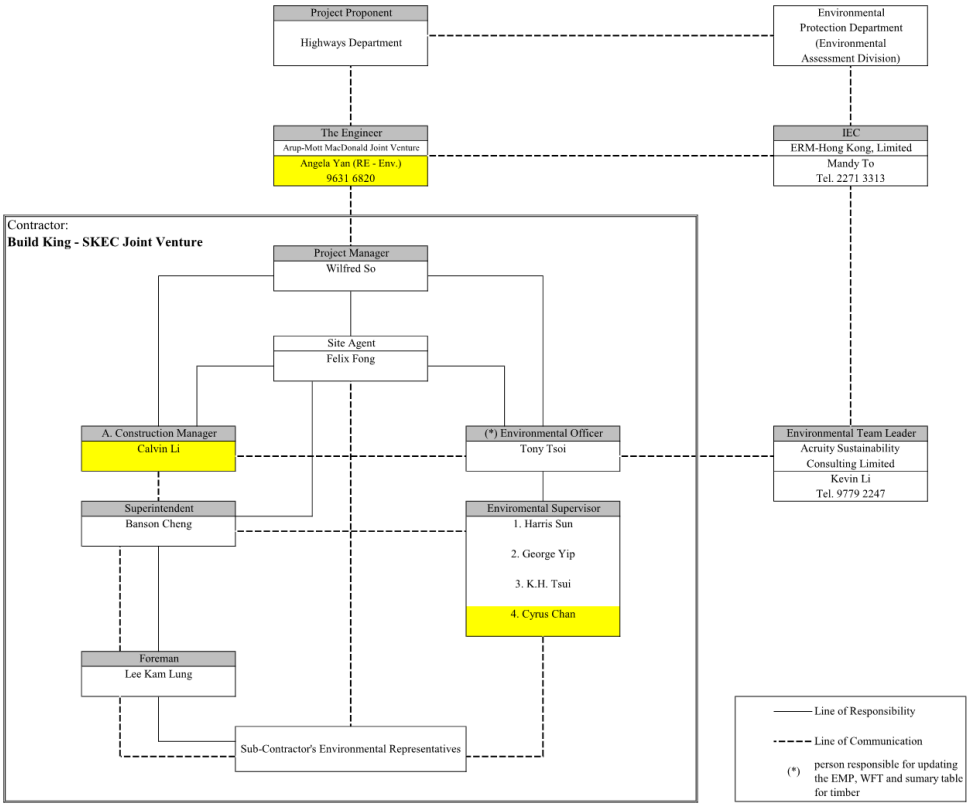


Appendix C
Project Organization Chart

Project O-Chart

Contract No.: HY/2014/20
Central Kowloon Route - Yau Ma Tei West
Environmental Organization Chart

Last Upate: 06 Jul 2020



Contact List

Party	Department / Company	Name of Contact Person	Position	Tel
Project Proponent	Highways Department			
The Engineer	Arup-Mott MacDonald Joint Venture	Angela Yan	Resident Engineer - Environmental	9631 6820
Independent Env. Checker	ERM-Hong Kong, Limited	Mandy To	IEC	2271 3313
Env. Team Leader	Acruity Sustainability Consulting Limited	Kevin Li	ETL	9779 2247
Contractor	Build King - SKEC Joint Venture	Wilfred So	Project Manager	2272 3138
		Felix Fong	Site Agent	9226 3611
		Calvin Li	Assistant Construction Manager	9423 4998
		Banson Cheng	Superintendent	6112 8807
		Lee Kam Lung	Foreman	9161 0944
		Tony Tsoi	(*) Environmental Officer	5543 4424
		K.H. Tsui	Enviromental Supervisor	9090 9052
		Harris Sun	Enviromental Supervisor	5401 1046
		George Yip	Enviromental Supervisor	9838 9043
		Cyrus Chan	Enviromental Supervisor	6186 2039

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	1. Check monitoring data submitted by ET; 2. Check Contractor's working method;	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor;	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	EPD; 3. Repeat measurement to 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.	3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	3. Ensure remedial measures properly implemented.	within 3 working days of notification; 3. 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 implemented;	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**
	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)

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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, deficiency rectified after observation
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 no less than 1.3 L/m^2 to achieve the dust removal efficiency.	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	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	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

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
		beyond the 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 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 should be sprayed with water or a dust suppression chemical continuously; •Any area that involves demolition activities should be						

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
		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; • 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 under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Selected rep. dust monitoring station	Construction stage	• TM-EIA	• Implemented
Construction Noise (Airborne)								

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
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; • 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.	Control construction airborne noise	Contractor	All construction sites	Construction stage	• Annex 5, TM-EIAO	• Implemented
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 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,	Sreen the noisy plant items to be used at all construction	Contractor	All construction sites where practicable	Construction stage	• Annex 5, TM-EIAO	• Implemented

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
		screen the noisy plants including air compressors, generators and handheld breakers, etc.	sites					
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 programme under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected rep. noise monitoring station	Construction stage	• TM-EIAO	• Implemented
Water Quality (Construction Phase)								

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
S6.9.1.1	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 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 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	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

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
		maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m^3/s a sedimentation basin of 30 m^3 would be required and for a flow rate of 0.5 m^3/s the basin would be 150 m^3. 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 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 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						

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
		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; • Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m^3 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 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						

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
		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 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; • 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						

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
		generated from exposed areas during the wet season (April to September) as far as practicable.						
S6.9.1.2	W2	<u>Tunneling Works and Underground Works</u> • Cut-&-cover tunneling work 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. • Uncontaminated discharge should pass through sedimentation tanks prior to off-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 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.	To minimize construction water quality impact from tunneling works	Contractor	All tunneling portion	Construction stage	• Water Pollution Control Ordinance • ProPECC PN 1/94 • TM-DSS • TM-EIAO	• N/A

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
S6.9.1.3	W3	Sewage Effluent • 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
S6.9.1.5	W4	Groundwater from Potential Contaminated Area: • No direct discharge of groundwater from contaminated areas should be adopted. • A discharge license under the WPCO through the Regional Office of EPD for groundwater discharge should be applied. Prior to the excavation works within these potentially contaminated areas, the groundwater quality should be reviewed during the process of discharge license application. The compliance to the Technical Memorandum on Standards for Effluents Discharged into Drainage on Sewerage Systems, Inland and Coastal Waters (TM-DSS) and the existence of prohibited substance should be confirmed. If the review results indicated that the groundwater to be generated from the excavation works would be contaminated, the contaminated groundwater should be either properly treated in compliance with the requirements of the TM-DSS or properly	To minimize groundwater quality impact from contaminated area	Contractor	Excavation areas where contamination is found	Construction stage	• Water Pollution Control Ordinance • TM-DSS • TM-EIAO	• Implemented

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
		recharged into the ground. • If wastewater treatment is deployed, the wastewater treatment unit shall deploy suitable treatment process (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (e.g. TPH) to undetectable range. All treated effluent from wastewater treatment plant shall meet the requirements as stated in TM-DSS and should be discharged into the foul sewers. • If groundwater recharging wells are deployed, recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in the Section 2.3 of TM-DSS. The baseline groundwater quality shall be determined prior to the selection of the recharge wells, and submit a working plan (including the laboratory analytical results showing the quality of groundwater at the proposed recharge location(s) as well as the pollutant levels of groundwater to be recharged) to EPD for agreement. Pollution levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Prior to recharge, any prohibited substances such as TPH products should be removed as necessary by installing the petrol						

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
		interceptor.						
S6.9.1.6	W6	Accidental Spillage In order to prevent accidental spillage of 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.	To minimize water quality impact from accidental spillage	Contractor	All construction site where practicable	Construction stage	• Water Pollution Control Ordinance • ProPECC PN 1/94 • TM-EIAO • TM-DSS	• Implemented.
Waste Management (Construction Waste)								
S7.4.1	WM1	On-site sorting of C&D material • 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	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for	Contractor	All construction sites	Construction stage	• DEVB (W) No. 6/2010	• N/A

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
		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 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.	structural use					
S7.5.1	WM2	<u>Construction and Demolition Material</u> • 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	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	Contractor	All construction sites	Construction stage	• Land (Miscellaneous Provisions) Ordinance • Waste Disposal Ordinance • ETWB TCW No. 19/2005	• Implemented

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
		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 • 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.	disposal					
S7.5.1	WM3	C&D Waste • 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 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	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

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
		used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.						
S7.5.1	WM5	Land-based Sediment • All construction plant and equipment shall be designed and maintained to minimize the risk of silt, sediments, contaminants or other pollutants being released into the water column or deposited in the locations other than designated location; • All vessels shall be sized such that adequate draft is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash; • Before moving the vessels which are used for transporting dredged material, excess material shall be cleaned from the decks and exposed fittings of vessels and the excess materials shall never be dumped into the sea except at the approved locations; • Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action. • The Contractors shall monitor all vessels transporting material to ensure that no dumping outside the approved location takes place. The Contractor shall keep and produce logs and other records to demonstrate compliance and that journeys are consistent with designated locations	To control pollution due to marine sediment	Contractor	Along CKR alignment	Construction stage	• ETWB TCW No. 34/2002	• Implemented

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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 copies of such records shall be submitted to the engineers; • The Contractors shall comply with the conditions in the dumping licence. • All bottom dumping vessels (Hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material; • The material shall be placed into the disposal pit by bottom dumping; • Contaminated marine mud shall be transported by spit barge of not less than 750m3 capacity and capable of rapid opening and discharge at the disposal site; • Discharge shall be undertaken rapidly and the hoppers shall be closed immediately. Material adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site. • For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping designated mud pit would be a possible arrangement. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfilling the requirements for fully confined mud disposal.						

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
S7.5.1	WM6	Chemical Waste • 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; • 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 chemical	Control the chemical waste and ensure proper storage, handling and disposal	Contractor	All construction sites	Construction stage	• Waste Disposal (Chemical Waste) (General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	• Implemented, deficiency rectified after observation

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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 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	General Refuse • 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 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.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	• Waste Disposal Ordinance	• Implemented
Land Contamination								
S8.9 & Appendix 8.4	LC2	Excavation of the Contaminated Soil • Prior to commencement of the excavation works at the contamination zone, the zone should be clearly marked out on site and the surface levels recorded. Excavation of contaminated material should be undertaken using dedicated earth-moving plant.	The contaminated soil will be excavated for on-site reuse	Contractor	PBH4	Prior to commencement of construction works within the contaminated area	• Practice Guide (PG) for Investigation and Remediation	• Implemented

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

<table>
<tr><th>EIA Ref.</th><th>EM&A Log Ref.</th><th>Recommended Mitigation Measures</th><th>Objectives of the Recommended Measures & Main Concerns to address</th><th>Implementation Agent</th><th>Location / Timing</th><th>Implementation Stage</th><th>Requirements and/ or standards to be achieved</th><th>Implementation Status</th></tr>
<tr><td></td><td></td><td>• The excavated contaminated soils would be stockpiled at designated area on site and covered by sheet to prevent dispersion of contamination during stockpiling.
• The Contractor should pay attention to the selection of suitable groundwater lowering schemes and discharge points if the groundwater table is higher than the contaminated soils during excavation. The Contractor should also obtain a valid Water Pollution Control Ordinance (WPCO) discharge licence from EPD where applicable.</td><td></td><td></td><td></td><td></td><td>of Contaminated Land
• Guidance Notes for Contaminated Land Assessment and Remediation
• Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management</td><td></td></tr>
<tr><td>S8.9 & Appendix 8.4</td><td>LC3</td><td>• Following completion of the excavation to the specified depth, at least one sample from the base of the excavation and four samples evenly distributed along the boundary of the excavation shall be taken for a closure assessment testing. The acceptance criterion is shown below:
<table><tr><th>Locations</th><th>Testing requirement</th><th>Acceptance Criteria</th></tr><tr><td>PBH4</td><td>PCBs</td><td>RBRGs (Public Park)</td></tr></table>• If the results of analysis below the RBRGs (Public Park), no further excavation will be required.

If the analysis indicates presence of contamination (i.e. noncompliance of the acceptance criteria), further excavation shall be carried out in 0.5m increment vertically and/or horizontally depending on</td><td></td><td></td><td></td><td></td><td></td><td>• Implemented</td></tr>
</table>

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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 location(s) of the sample(s) which has exceeded the acceptance criteria. Further sampling shall also be conducted for compliance testing. The process of excavation,sampling and compliance testing should continue until all contaminated materials are removed and should be supervised by a Land Contamination Specialist.						
Appendix 8.4	LC4	• A Remediation Report (RR) to demonstrate adequate clean-up shall be prepared and submitted to EPD for endorsement prior to the commencement of any construction/development works within the sites. No construction/development works shall be carried out prior to the endorsement of the RR by EPD.						• Implemented
Hazard to Life								
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/ workshops should be provided to enhance their safe driving attitude and practice. Smoking should be strictly prohibited.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction stage	-	• N/A
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	-	• N/A

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
Landscape & Visual								
S10.10.1 Table 10.11	LV3	Good Site Management • 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 10.11	LV4	Screen Hoarding • Decorative screen hoarding should be erected to screen the public from the construction area. It should be designed to be compatible with the existing urban context.	Minimize visual impact	Contractor	Within Project site	Construction stage	-	• Implemented
S10.10.1 Table 10.11	LV5	Lighting Control during Construction • 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	-	• N/A
S10.10.1 Table 10.11	LV6	Erosion Control • 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/2014/20 (Yau Ma Tei West)

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	Tree Protection & Preservation • 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 GLTM Section, DEVB	• Implemented
S10.10.1 Table 10.11	LV8	Tree Transplantation • 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	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	• Implemented

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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
		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.					practices from Greening, Landscape and Tree Management (GLTM) Section, DEVB • ETWB TCW 2/2004	
S10.10.1 Table 10.11	LV9	<u>Compensatory Planting</u> • For trees unavoidably affected by the Project that have to be removed, 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 and therefore be part of the bigger wider planting plans. Onsite compensation planting is preferred but if necessary, additional receptor sites outside	Minimize visual impact and also enhance landscape	Contractor	Within Project site	Construction stage	• ETWB TCW 3/2006 • Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DEVB • ETWB TCW 2/2004	• Implemented

Environmental Mitigation Implementation Schedule –
Contract No. HY/2014/20 (Yau Ma Tei West)

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 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 for cut and cover tunnels	Construction stage	• AMOs requirements	• N/A
EM&A Project								
S13.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual	Control EM&A Performance	Highways Department	All construction sites	Construction stage	• EIAO Guidance Note No. 4/2010 • TM-EIAO	• Implemented
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 YMTW

Jun-20						
Sun	Mon	Tue	Wed	Thur	Fri	Sat
	1	2	3	4	5	6
			Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11,W-N18 & W-N25A			
7	8	9	10	11	12	13
		Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11,W-N18 & W-N25A				
14	15	16	17	18	19	20
	Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11,W-N18 & W-N25A					Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11,W-N18 & W-N25A
21	22	23	24	25	26	27
					Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11,W-N18 & W-N25A	
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: August 28th, 2019

Equipment Name	:	Digital Dust Indicator, Model LD-5R
Code No.	:	080000-72
Quantity	:	1 unit
Serial No.	:	851820
Sensitivity	:	0.001 mg/m3
Sensitivity Adjustment	:	640
Scale Setting	:	August 23rd, 2019

We hereby certify that the above mentioned instrument has been calibrated satisfactory.

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Tong Zhang

Tong Zhang
Overseas & New Business Group
Overseas Sales Department

SIBATA SCIENTIFIC TECHNOLOGY LTD.

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: September 24th, 2019

Equipment Name	:	Digital Dust Indicator, Model LD-5R
Code No.	:	080000-72
Quantity	:	1 unit
Serial No.	:	992818
Sensitivity	:	0.001 mg/m3
Sensitivity Adjustment	:	638CPM
Scale Setting	:	September 3rd, 2019

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

Sincerely

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Tong Zhang

SIBATA SCIENTIFIC TECHNOLOGY LTD.

Tong Zhang
Overseas & New Business Group
Overseas Sales Department

TISCH Environmental

RECALIBRATION DUE DATE:
October 10, 2020

Certificate of Calibration

Calibration Certification Information					
Cal. Date:	October 10, 2019	**Rootsmeter S/N:** 438320	**Ta:** 296	°K
Operator:	Jim Tisch		**Pa:** 748.03	mm Hg
Calibration Model #:	TE-5028A	**Calibrator S/N:** **3702**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3100	4.1	1.50
2	3	4	1	1.0240	6.7	2.50
3	5	6	1	0.9260	8.0	3.00
4	7	8	1	0.8620	9.4	3.50
5	9	10	1	0.6540	16.2	6.00

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)
0.9855	0.7523	1.2192	0.9945	0.7592	0.7704
0.9820	0.9590	1.5739	0.9910	0.9678	0.9946
0.9803	1.0586	1.7242	0.9893	1.0684	1.0895
0.9784	1.1351	1.8623	0.9874	1.1455	1.1768
0.9694	1.4823	2.4383	0.9783	1.4959	1.5409
QSTD	**m=**	**1.66723**	**QA**	**m=**	**1.04399**
	b=	**-0.03281**		**b=**	**-0.02074**
	r=	**0.99991**		**r=**	**0.99991**

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:	YMT Catholic Primary School	Site ID:	W-A1	Date:	28-May-2020
Serial No:	1049	Model:	TE-5170X	Operator:	Tim

Ambient Condition

Corrected Pressure (mm Hg):	761.6	Temperature (deg K):	301.9

Calibration Orifice

Model:	TE-5028	Slope:	1.66723
Serial No.:	3702	Intercept:	-0.03281
Calibration Due Date:	10-Oct-20	Corr. Coeff:	0.99991

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	1.99	0.861	32.3	32.12
2	2.86	1.029	34.5	34.31
3	3.11	1.072	35.2	35.01
4	3.87	1.193	36.8	36.60
5	4.28	1.254	37.8	37.59

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

m= 13.8403 b= 20.1573 Corr. Coeff= 0.9994

Sampler set point(SSP) 37 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

Checked by: Tim Date: 28-May-20

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

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	YMT Catholic Primary School	Site ID:	W-A1	Date:	15-Jun-2020
Serial No:	1049	Model:	TE-5170X	Operator:	Tim

Ambient Condition

Corrected Pressure (mm Hg):	758.0	Temperature (deg K):	302.5

Calibration Orifice

Model:	TE-5028	Slope:	1.66723
Serial No.:	3702	Intercept:	-0.03281
Calibration Due Date:	10-Oct-20	Corr. Coeff:	0.99991

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	2.13	0.887	33.5	33.21
2	2.94	1.039	35.8	35.49
3	3.27	1.095	36.6	36.28
4	3.96	1.203	38.1	37.77
5	4.33	1.257	38.8	38.46

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

m= 14.2291 b= 20.6417 Corr. Coeff= 0.9996

Sampler set point(SSP) 38 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

Checked by: Tim Date: 15-Jun-20

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

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Man Cheong Building	Site ID:	W-A6	Date:	28-May-2020
Serial No:	1050	Model:	TE-5170X	Operator:	Tim

Ambient Condition

Corrected Pressure (mm Hg):	757.3	Temperature (deg K):	299.6

Calibration Orifice

Model:	TE-5028	Slope:	1.66723
Serial No.:	3702	Intercept:	-0.03281
Calibration Due Date:	10-Oct-20	Corr. Coeff:	0.99991

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	0.73	0.530	27.4	27.28
2	1.24	0.685	30.1	29.97
3	2.35	0.935	34.2	34.05
4	3.38	1.117	36.8	36.64
5	4.27	1.254	38.7	38.53

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

m= 15.5453 b= 19.2364 Corr. Coeff= 0.9991

Sampler set point(SSP) 38 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

Checked by: Tim Date: 28-May-20

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

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Man Cheong Building	Site ID:	W-A6	Date:	15-Jun-2020
Serial No:	1050	Model:	TE-5170X	Operator:	Tim

Ambient Condition

Corrected Pressure (mm Hg):	758.0	Temperature (deg K):	302.5

Calibration Orifice

Model:	TE-5028	Slope:	1.66723
Serial No.:	3702	Intercept:	-0.03281
Calibration Due Date:	10-Oct-20	Corr. Coeff:	0.99991

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	0.66	0.503	27.9	27.66
2	1.35	0.711	31.2	30.93
3	2.47	0.954	35.3	34.99
4	3.45	1.124	37.8	37.47
5	4.31	1.254	39.8	39.45

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

m= 15.7598 b= 19.7738 Corr. Coeff= 0.9998

Sampler set point(SSP) 39 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

Checked by: Tim Date: 15-Jun-20

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-13663-E0)***
Microphone:	***ACO 7052 (Serial No.:73784)***
Preamplifier:	***NTi Audio MA220 (Serial No.:6282)***

Submitted by:

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

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: 11 September 2019

Date of calibration: 12 September 2019

Calibrated by: _____
Calibration Technician

Certified by: _____
Mr. Ng Yan Wa
Laboratory Manager

Date of issue: **12 September 2019**

Certificate No.: APJ19-078-CC001

Page 1 of 4

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

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

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:	24.2 °C
Air Pressure:	1008 hPa
Relative Humidity:	69.2 %

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, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting		Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA	SPL	Fast	94	1000	94.0	±0.4

Linearity

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

Certificate No.: APJ19-078-CC001

Acoustics and Air Testing Laboratory Co. Ltd. (A+A) *L

Page 2 of 4

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

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

Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dB SPL	Fast	94	31.5	94.1	±2.0
				63	94.1	±1.5
				125	94.2	±1.5
				250	94.1	±1.4
				500	94.1	±1.4
				1000	94.0	Ref
				2000	93.7	±1.6
				4000	94.1	±1.6
				8000	93.7	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA SPL	Fast	94	31.5	54.6	-39.4±2.0
				63	67.9	-26.2±1.5
				125	78.1	-16.1±1.5
				250	85.5	-8.6±1.4
				500	90.8	-3.2±1.4
				1000	94.0	Ref
				2000	94.9	+1.2±1.6
				4000	95.1	+1.0±1.6
				8000	92.6	-1.1+2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBC SPL	Fast	94	31.5	91.1	-3.0±2.0
				63	93.3	-0.8±1.5
				125	94.0	-0.2±1.5
				250	94.1	-0.0±1.4
				500	94.1	-0.0±1.4
				1000	94.0	Ref
				2000	93.6	-0.2±1.6
				4000	93.4	-0.8±1.6
				8000	90.7	-3.0+2.1; -3.1

ACOUSTICS AND AIR TESTING LABORATORY CO. LTD. (A+A) *L

Certificate No.: APJ19-078-CC001

Page 3 of 4

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

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

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	± 0.05
	250 Hz	± 0.05
	500 Hz	± 0.05
	1000 Hz	± 0.05
	2000 Hz	± 0.05
	4000 Hz	± 0.05
	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.

ACOUSTICS AND AIR TESTING LABORATORY CO. LTD. (A+A) *L

Certificate No.: APJ19-078-CC001 *Page 4 of 4*

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

(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.:73780)***
Preamplifier:	***NTi Audio MA220 (Serial No.:5235)***

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: 6 January 2020

Date of calibration: 10 January 2020

Calibrated by: _____
Calibration Technician

Certified by: _____
Tang Cheuk Hang
Quality Manager

Date of issue: 10 January 2020

(A+A) *L

Certificate No.: APJ19-143-CC001

Page 1 of 4

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

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

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:	23.0 °C
Air Pressure:	1006 hPa
Relative Humidity:	71.0 %

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, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting		Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA	SPL	Fast	94	1000	94.0	+0.4

Linearity

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting		Time Weighting	Level, dB	Frequency, Hz		
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, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting		Time Weighting	Level, dB	Frequency, Hz		
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

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

Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
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	93.4	±1.6
				8000	92.4	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
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	95.0	+1.2 ±1.6
				4000	94.4	+1.0 ±1.6
				8000	91.3	-1.1+2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBC SPL	Fast	94	31.5	91.0	-3.0 ±2.0
				63	93.3	-0.8 ±1.5
				125	93.9	-0.2 ±1.5
				250	94.1	-0.0 ±1.4
				500	94.1	-0.0 ±1.4
				1000	94.0	Ref
				2000	93.6	-0.2 ±1.6
				4000	92.6	-0.8 ±1.6
				8000	89.4	–3.0 +2.1; –3.1

Certificate No.: APJ19-143-CC001

Page 3 of 4

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

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

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	± 0.10
	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	± 0.05
	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.

(A+A)*L

Certificate No.: APJ19-143-CC001

Page 4 of 4

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	28-Sep-2019	**Certificate Number**	MLCN192490S

Customer Information

Company Name	Acuity Sustainability Consulting Limited
Address	Unit C, 11/F, Ford Glory Plaza, No. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong Kong

Equipment-under-Test (EUT)

Description	Acoustic Calibrator
Manufacturer	Pulsar
Model Number	105
Serial Number	63705
Equipment Number	--

Calibration Particular

Date of Calibration	28-Sep-2019		
Calibration Equipment	4231(MLTE008) / AV180068 / 13-May-20 1357(MLTE190) / MLEC19/05/02 / 26-May-20		
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. All calibration results were within EUT specification.		

Approved By & Date

K.O. Lo 28-Sep-2019

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.

Page 1 of 2

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 B 室
Unit B, 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. MLCN192490S

Calibration Data				
EUT Setting	**Standard Reading**	**EUT Error from Setting**	**Calibration Uncertainty**	**EUT Specification**
94 dB	93.8 dB	-0.2 dB	0.20 dB	± 0.2 dB

- END -

Calibrated By : Dan
Date : 28-Sep-19

Checked By : K.O. Lo
Date : 28-Sep-19

Page 2 of 2

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 B 室
Unit B, 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

Invalid if unsigned

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

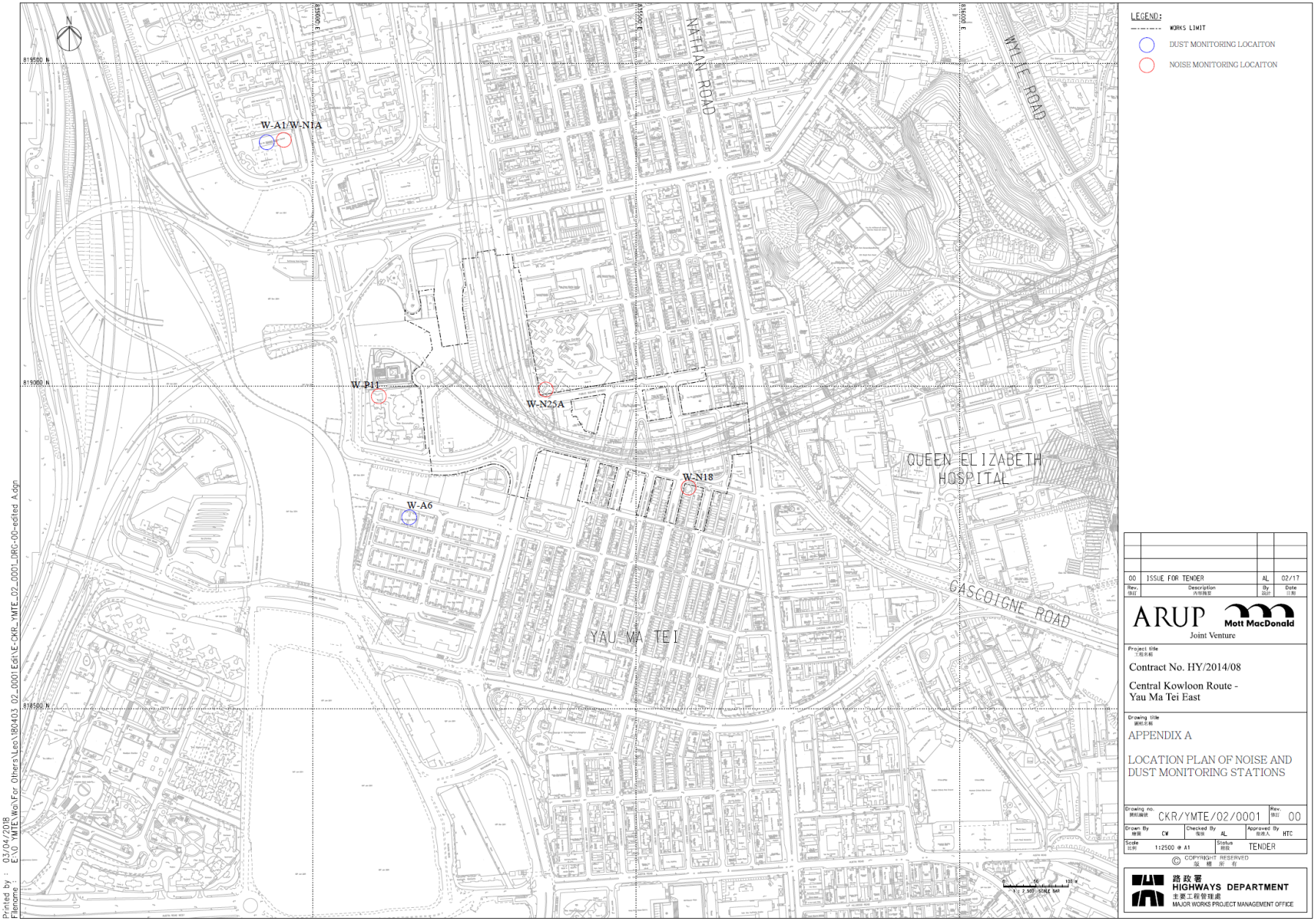
Registration Number : HOKLAS 241
註冊號碼：

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


LEGEND:
WORKS LIMIT
DUST MONITORING LOCAITON
NOISE MONITORING LOCAITON
W-A1/W-N1A
W-P11
W-N25A
W-N18
W-A6
NATHAN ROAD
WYLIE ROAD
QUEEN ELIZABETH HOSPITAL
GASCOIGNE ROAD
YAU MA TEI
819500 N
819000 N
818500 N
835000 E
835500 E
836000 E
0 50 100 M
1 : 2,500 SCALE BAR
00 ISSUE FOR TENDER AL 02/17
Rev. Description By Date
ARUP
Mott MacDonald
Joint Venture
Project title
Contract No. HY/2014/08
Central Kowloon Route -
Yau Ma Tei East
Drawing title
APPENDIX A
LOCATION PLAN OF NOISE AND DUST MONITORING STATIONS
Drawing no. CKR/YMTE/02/0001
Rev. 00
Drawn By CW
Checked By AL
Approved By HTC
Scale 1:2500 @ A1
Status TENDER
COPYRIGHT RESERVED
路政署
HIGHWAYS DEPARTMENT
主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE
Printed by : 03/04/2018
Filename : E:\0 YMTE\Wgs\For Others\Leo\180403 02_0001 Edit\E-CKR_YMTE_02_0001_DRG-00-edited A.dgn

Appendix L
Monitoring Data (Air Monitoring)

Location: Yau Ma Tei Catholic Primary School (Hoi Wang Road) (W-A1)
Monitoring date: 3, 9, 15, 20, 26 June 2020
Parameter : TSP 1-hour
Other Factors Nearby traffic, construction work from West Kowloon Government Offices, school activities

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)
03/06/2020	Sunny	8:57	21	26	29
09/06/2020	Cloudy	9:40	34	39	41
15/06/2020	Sunny	9:30	30	27	35
20/06/2020	Sunny	9:45	54	59	48
26/06/2020	Cloudy	9:40	55	59	51

Location: Man Cheong Building (W-A6)
Monitoring date: 3, 9, 15, 20, 26 June 2020
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)
03/06/2020	Sunny	9:33	30	37	35
09/06/2020	Cloudy	10:14	28	36	40
15/06/2020	Sunny	9:55	36	44	42
20/06/2020	Sunny	9:00	43	58	47
26/06/2020	Cloudy	9:12	64	59	70

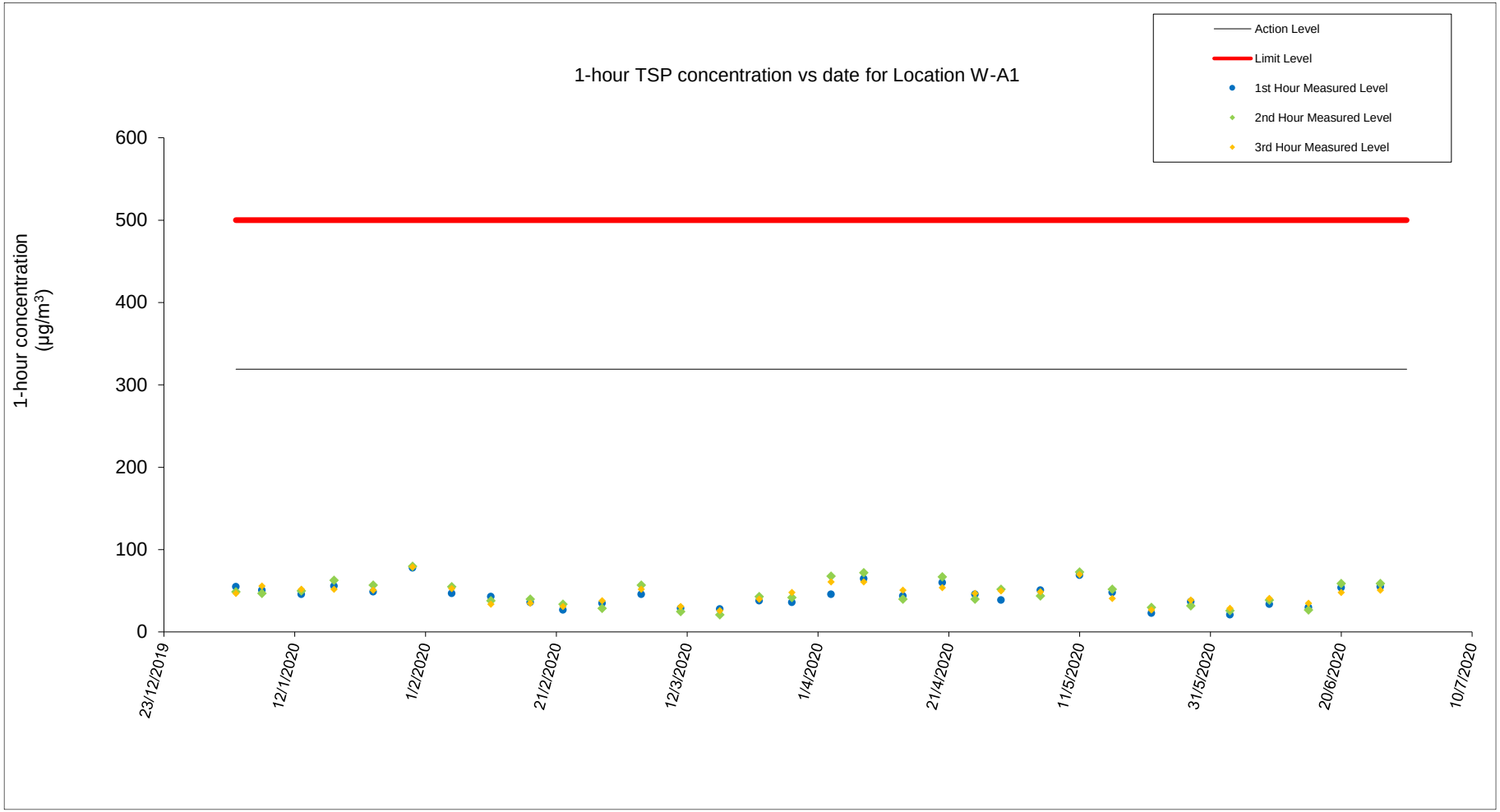


Figure 1: Graphical Illustration of Measured 1-hour TSP ($\mu g/m^3$) Levels at W-A1

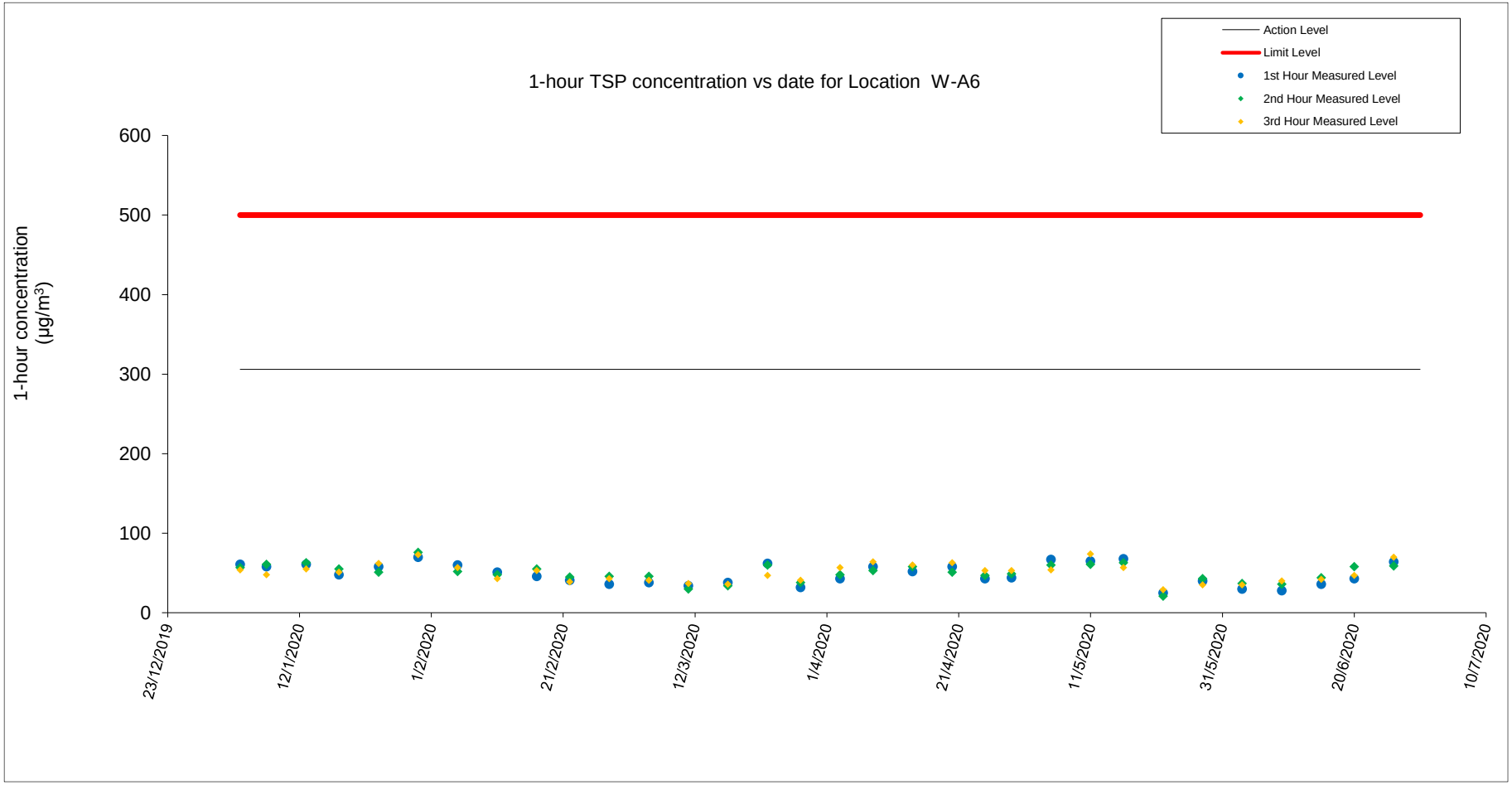


Figure 2: Graphical Illustration of Measured 1-hour TSP (µg/m^3) Levels at W-A6

Location: Yau Ma Tei Catholic Primary School (Hoi Wang Road) (W-A1)

Monitoring date: 3, 9, 15, 20, 26 June 2020

Parameter : TSP 24-hour

Other Factors Nearby traffic, construction work from West Kowloon Government Offices

Date of Calibration:	15-Jun-20	Slope =	14.2291
Calibration due date:	30-Jun-20	Intercept =	20.6417
Date of Calibration:	28-May-20	Slope =	13.8403
Calibration due date:	12-Jun-20	Intercept =	20.1573

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	(^oC)	(hPa)	(m^3/min)	(m^3)	Initial	Final	(g)	($\mu g/m^3$)
03/06/2020	Sunny	3678.1	3702.1	1440.0	36	38	37.0	29.8	1008.6	1.18	1704	2.7241	2.7680	0.0439	26
09/06/2020	Cloudy	3702.1	3726.1	1440.0	38	39	38.5	29.4	1008.2	1.29	1859	2.7415	2.7847	0.0432	23
15/06/2020	Sunny	3727.1	3751.1	1440.0	37	39	38.0	29.3	1011.1	1.20	1721	2.7323	2.7667	0.0344	20
20/06/2020	Sunny	3751.1	3775.1	1440.0	36	37	36.5	30.0	1008.5	1.08	1557	2.7086	2.7318	0.0232	15
26/06/2020	Cloudy	3775.1	3799.1	1440.0	36	38	37.0	30.3	1007.9	1.11	1603	2.6953	2.7359	0.0406	25

Location: Man Cheong Building (W-A6)

Monitoring date: 3, 9, 15, 20, 26 June 2020

Parameter : TSP 24-hour

Other Factors Nearby traffic

Date of Calibration:	15-Jun-20	Slope =	15.7598
Calibration due date:	30-Jun-20	Intercept =	19.7738
Date of Calibration:	28-May-20	Slope =	15.5453
Calibration due date:	12-Jun-20	Intercept =	19.2364

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	(^oC)	(hPa)	(m^3/min)	(m^3)	Initial	Final	(g)	($\mu g/m^3$)
03/06/2020	Sunny	3332.0	3356.0	1440.00	37	39	38.0	29.8	1008.6	1.18	1694	2.7153	2.7621	0.0468	28
09/06/2020	Cloudy	3356.0	3380.0	1440.00	38	39	38.5	29.4	1008.2	1.21	1741	2.7091	2.7607	0.0516	30
15/06/2020	Sunny	3380.5	3404.5	1440.00	37	39	38.0	29.3	1011.1	1.13	1633	2.7078	2.7472	0.0394	24
20/06/2020	Sunny	3404.5	3428.5	1440.00	37	38	37.5	30.0	1008.5	1.09	1575	2.7408	2.7694	0.0286	18
26/06/2020	Cloudy	3428.5	3452.5	1440.00	36	38	37.0	30.3	1007.9	1.06	1527	2.7389	2.7787	0.0398	26

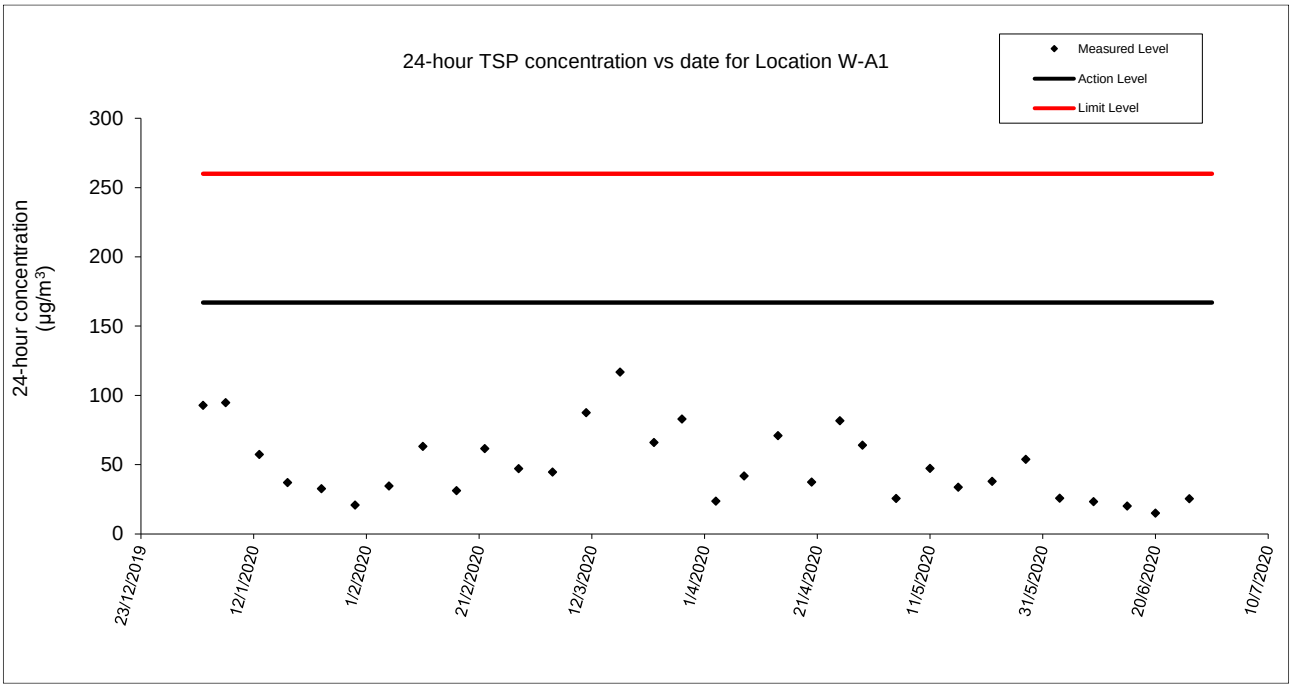


Figure 3: Graphical Illustration of Measured 24-hour TSP (µg/m^3) Levels at W-A1

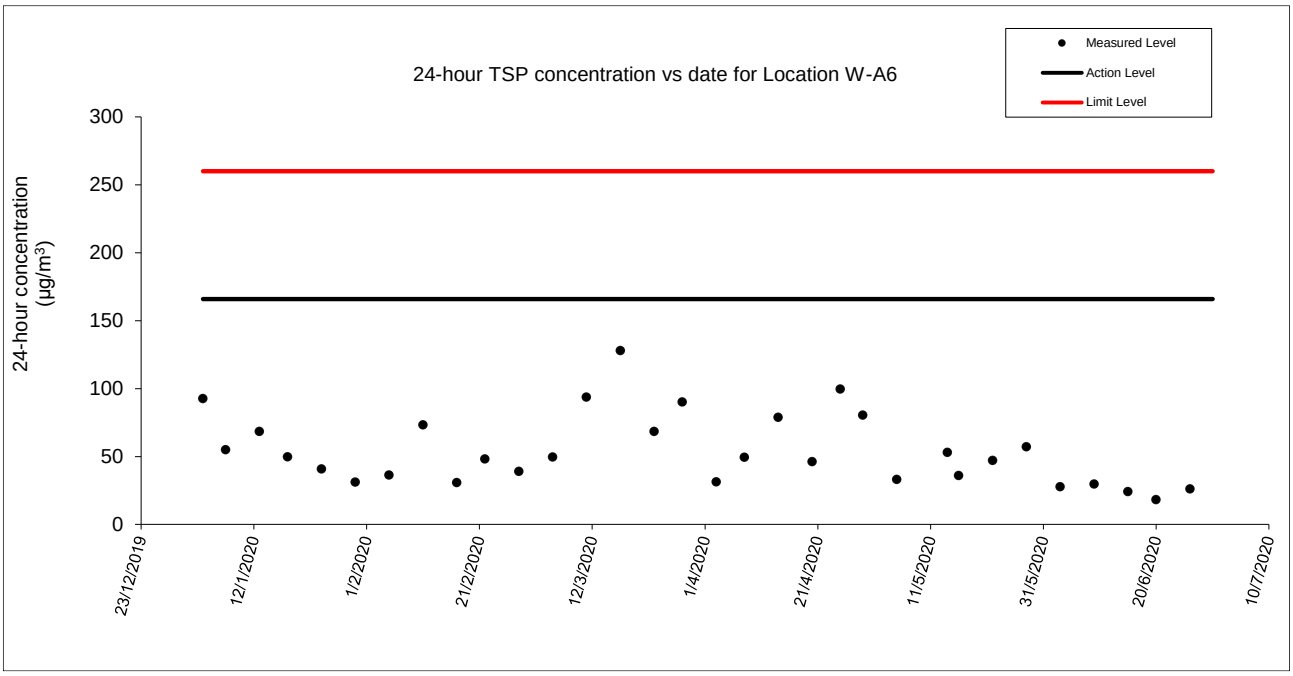
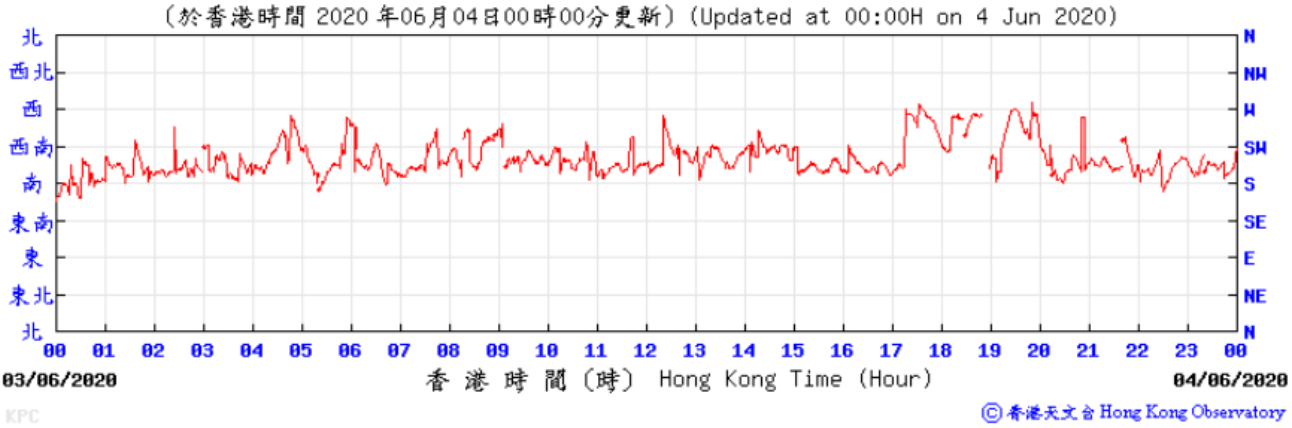


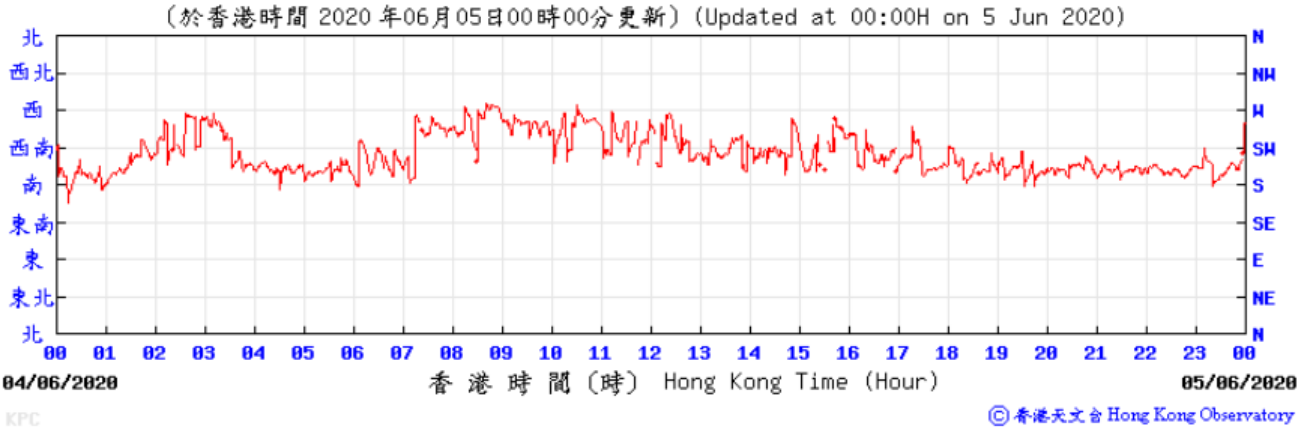
Figure 4: Graphical Illustration of Measured 24-hour TSP (µg/m^3) Levels at W-A6

Wind direction data for 3, 4, 9, 10, 15, 16, 20, 21, 26, 27 June 2020

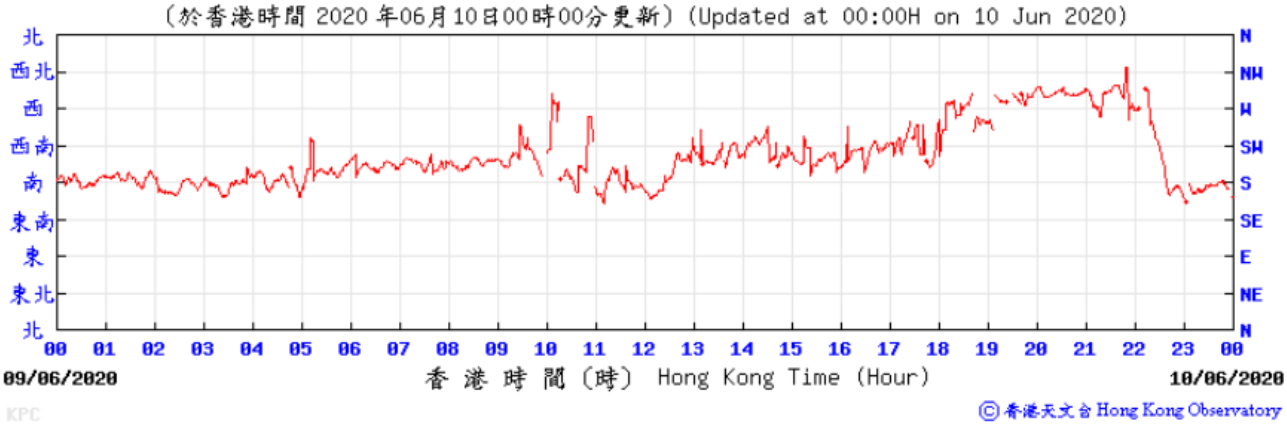
Wind Direction:



Wind Direction:

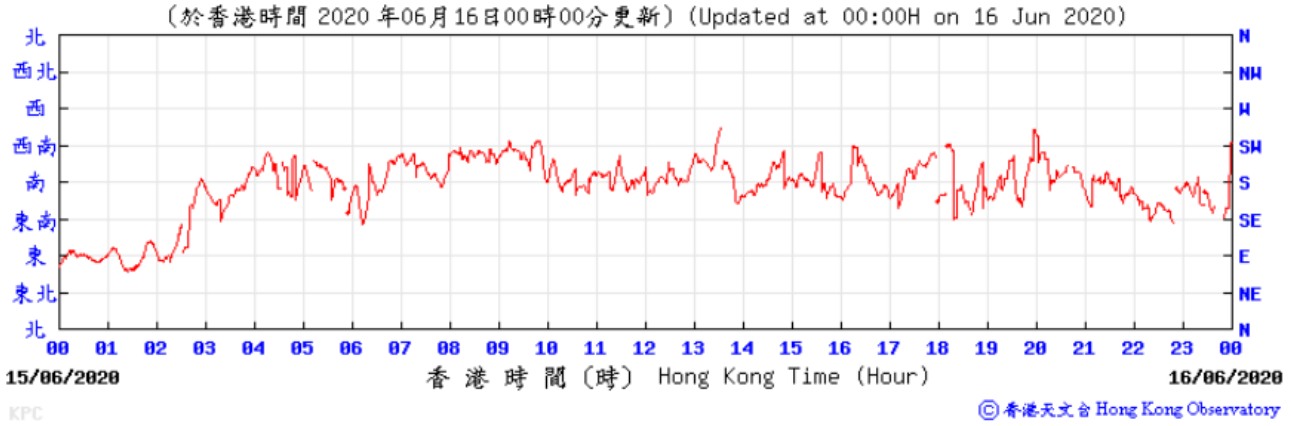


Wind Direction:

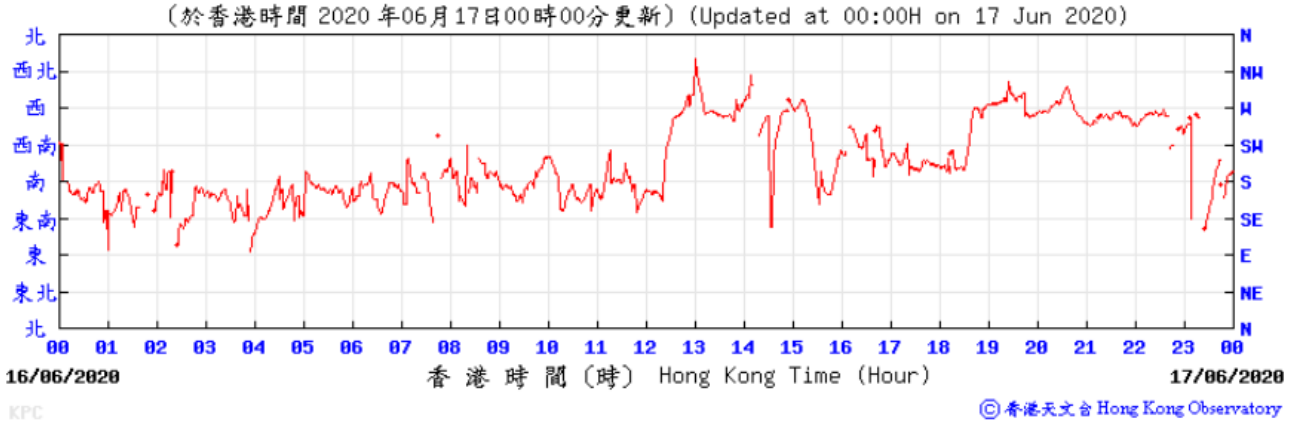


Wind Direction:

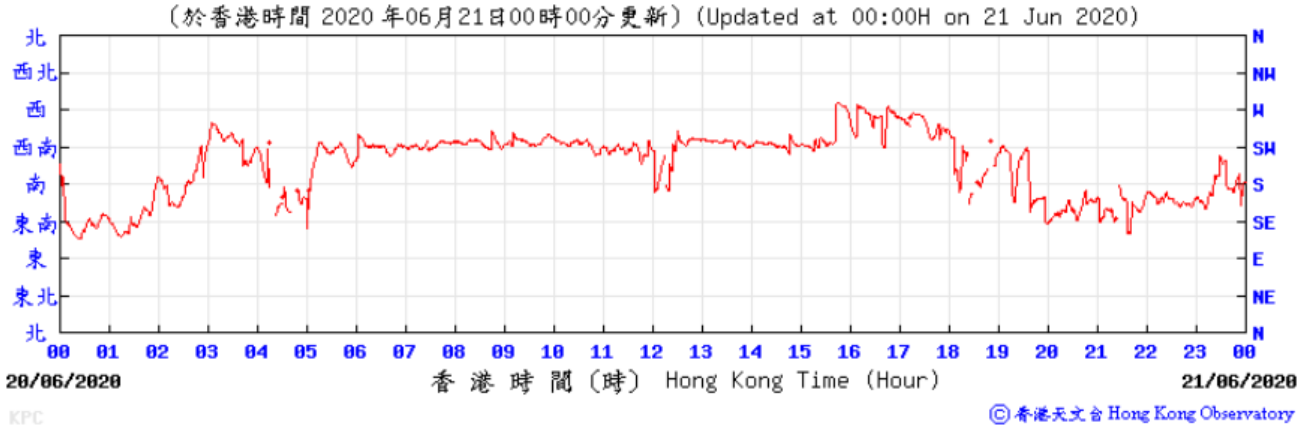
Wind Direction:



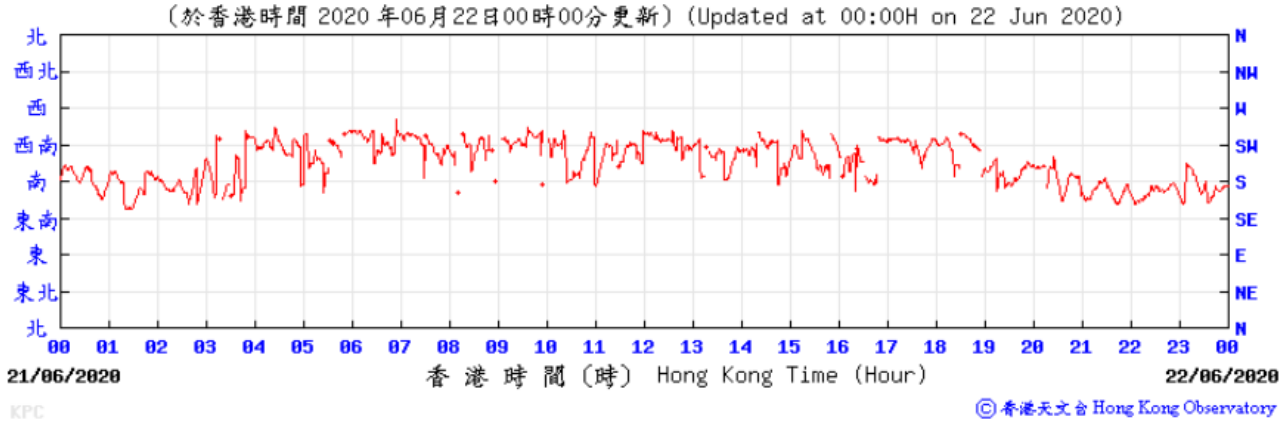
Wind Direction:



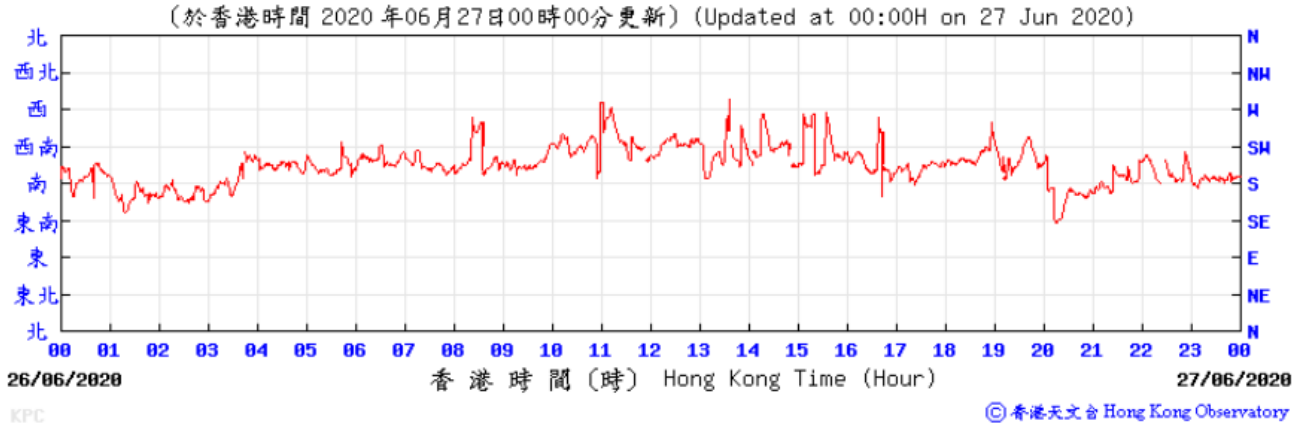
Wind Direction:



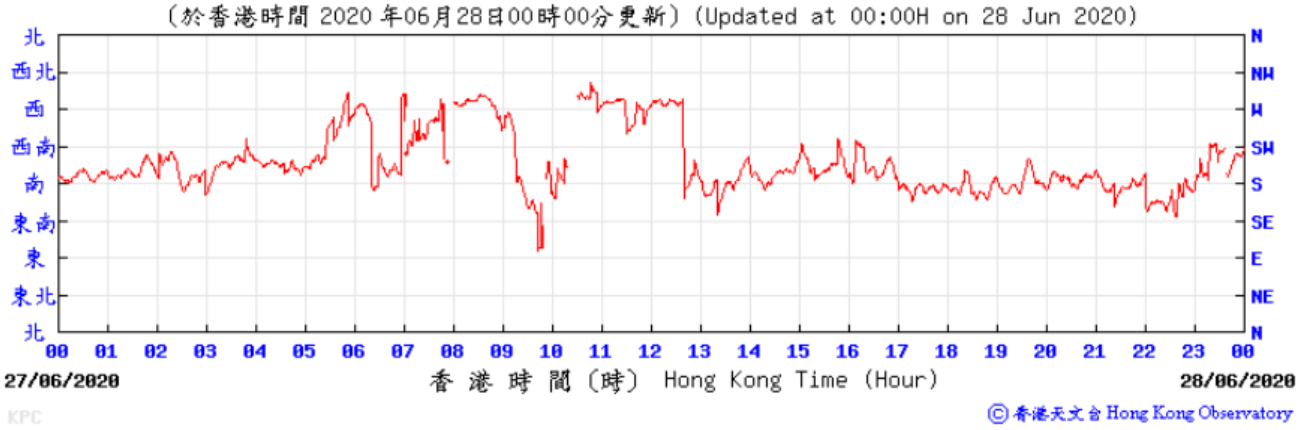
Wind Direction:



Wind Direction:

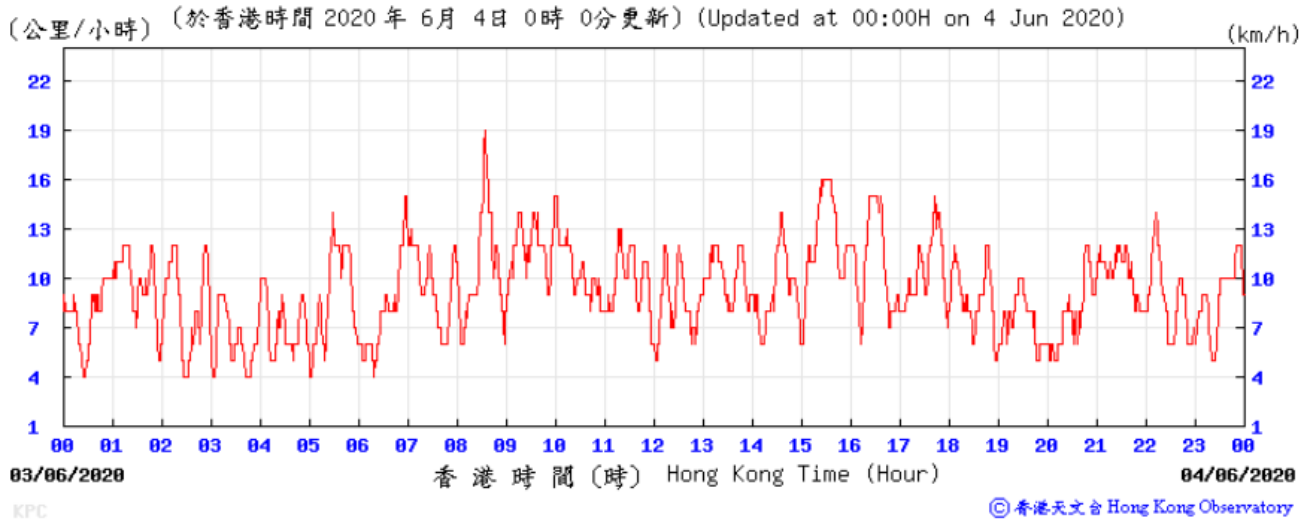


Wind Direction:

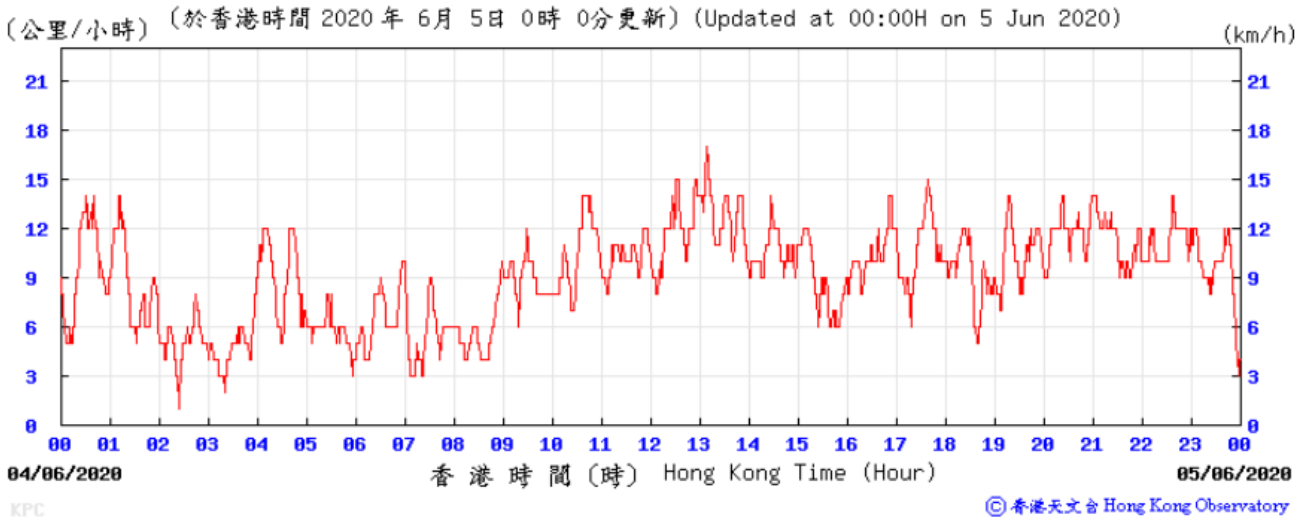


Wind speed data for 3, 4, 9, 10, 15, 16, 20, 21, 26, 27 June 2020

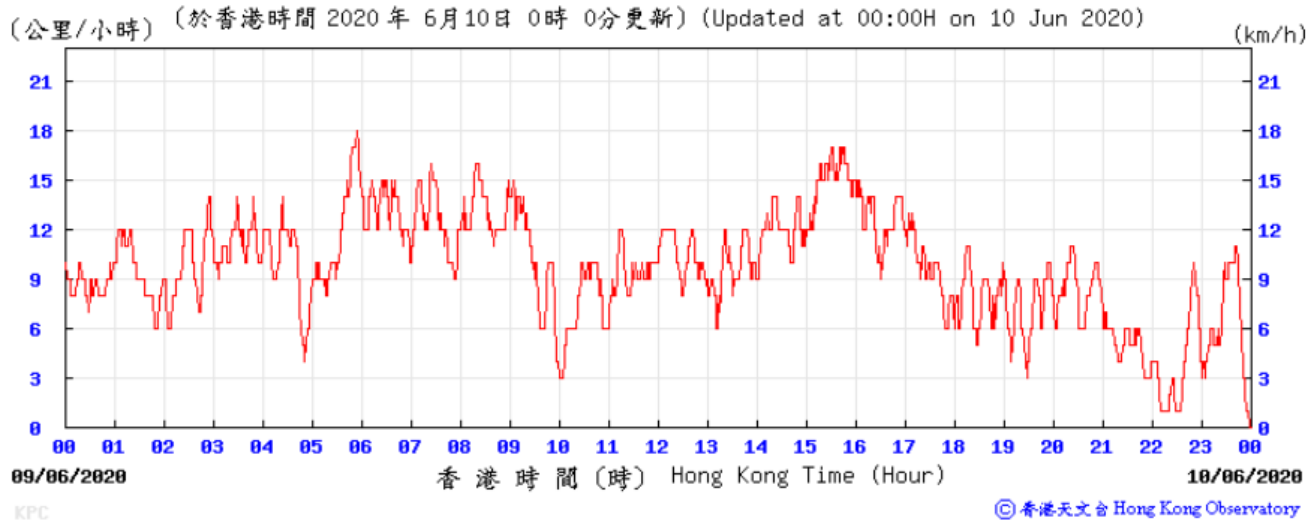
Wind Speed:



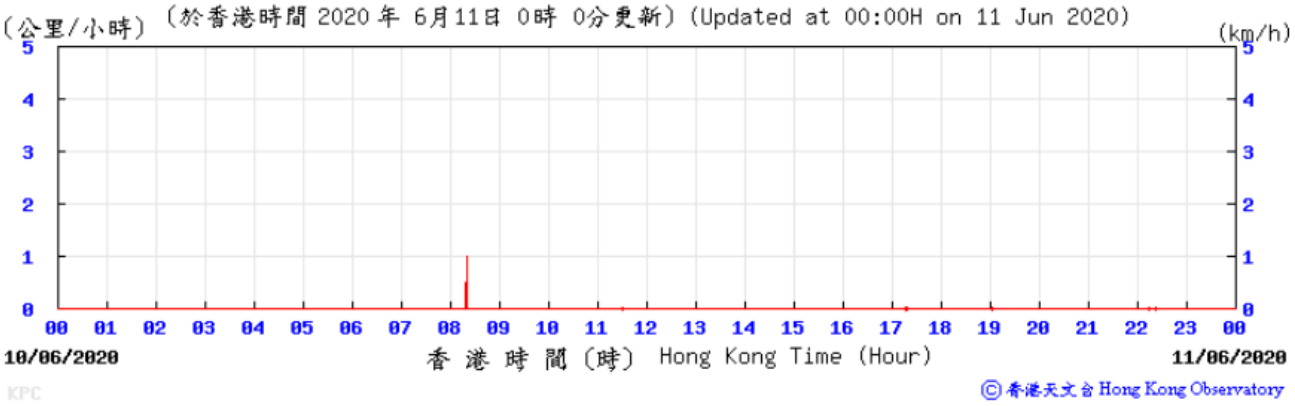
Wind Speed:



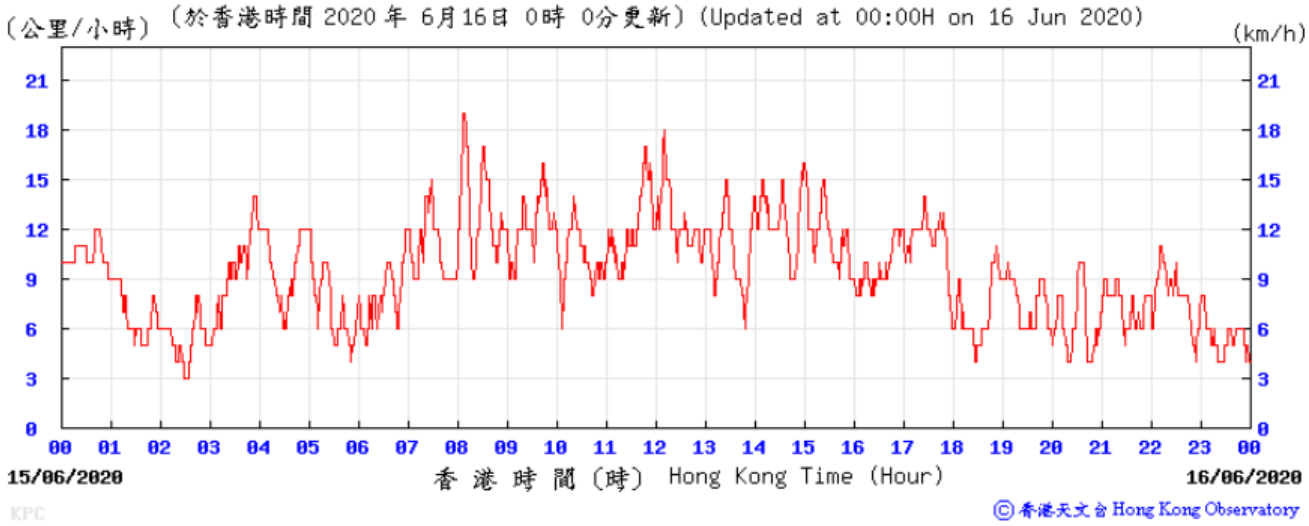
Wind Speed:



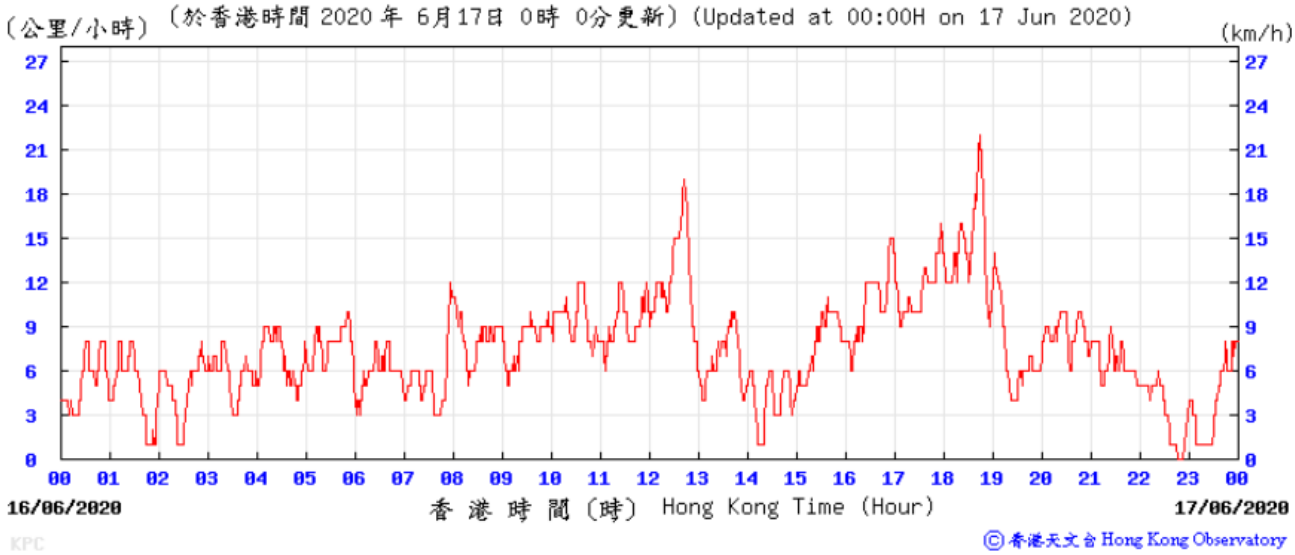
Wind Speed:



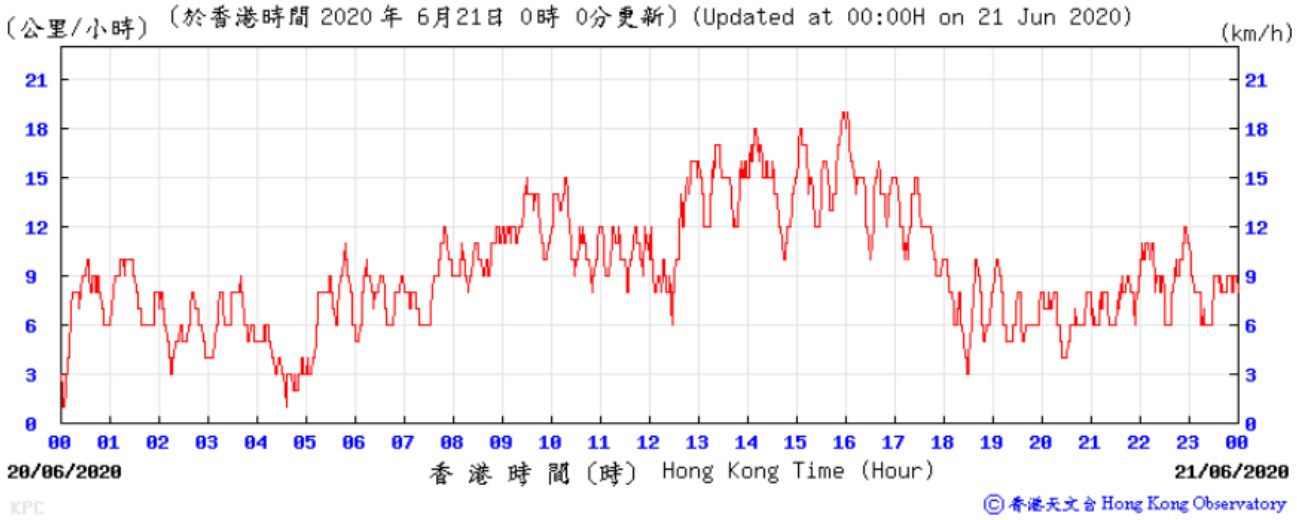
Wind Speed:



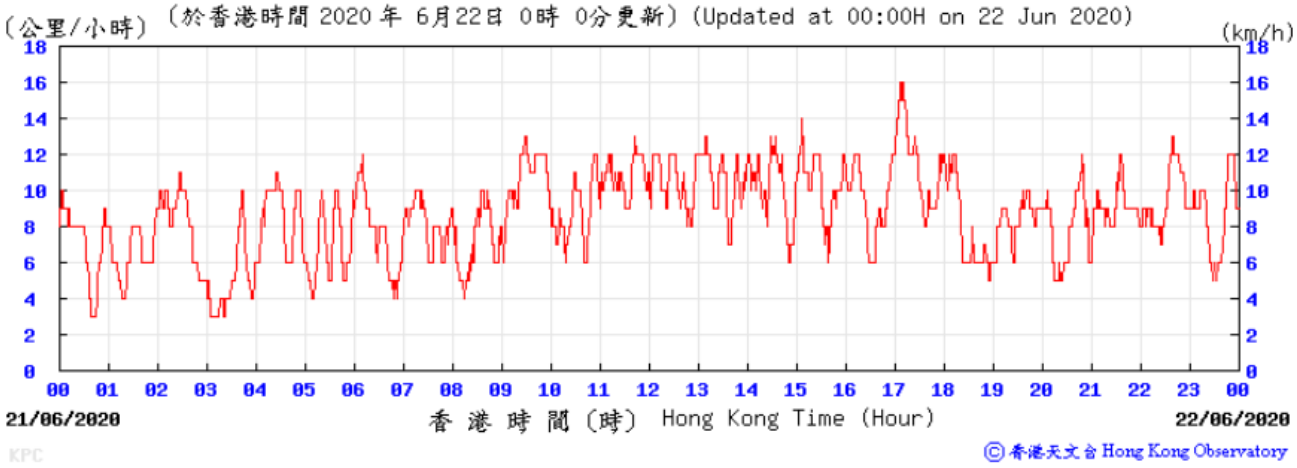
Wind Speed:



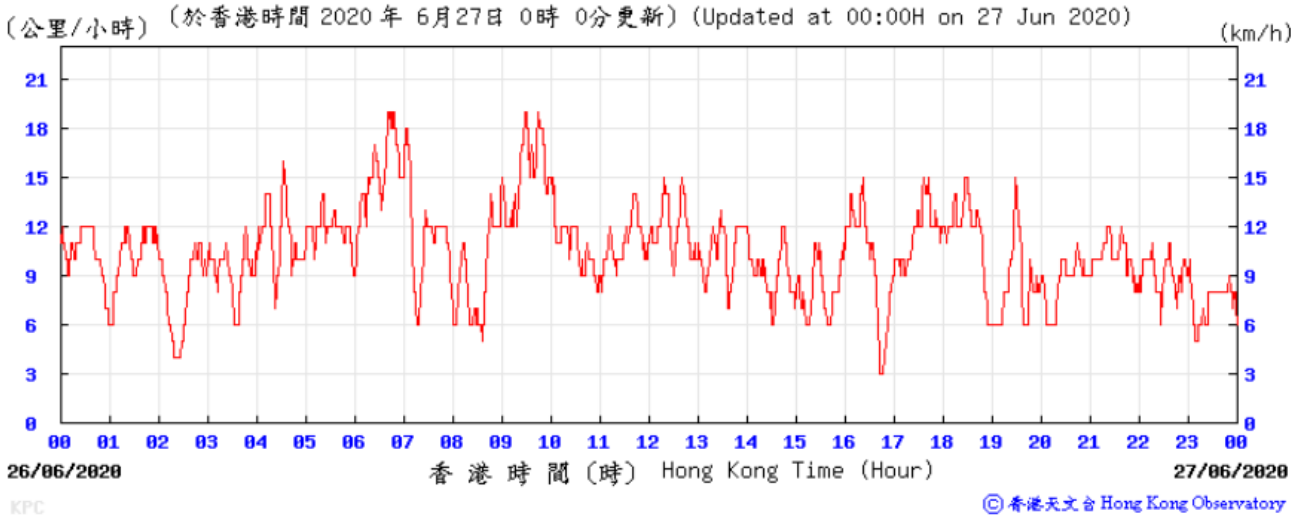
Wind Speed:



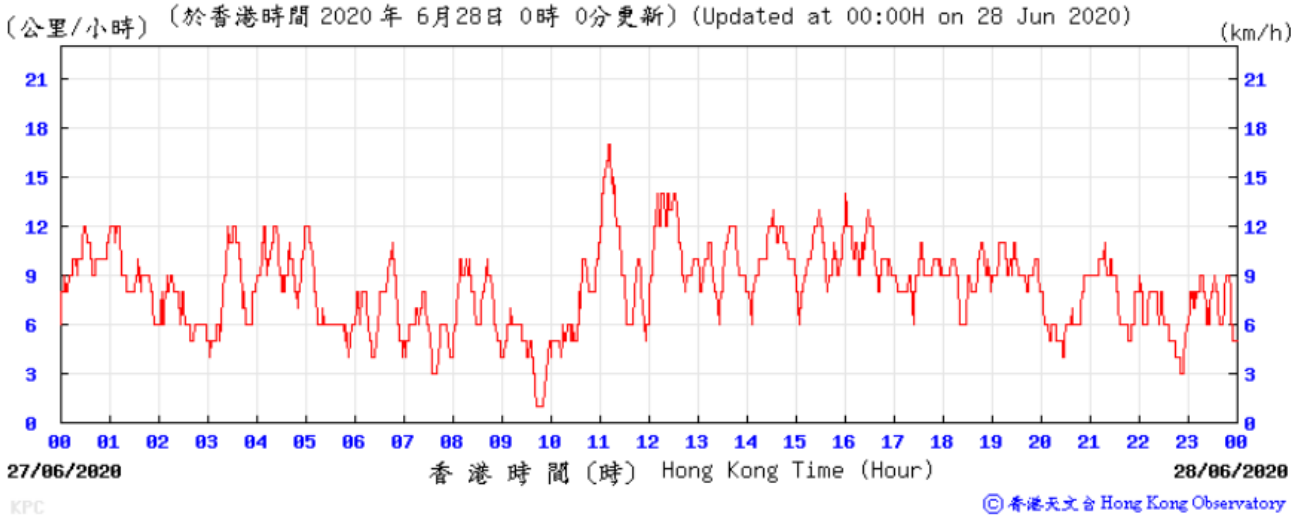
Wind Speed:



Wind Speed:



Wind Speed:


(公里/小時) (於香港時間 2020 年 6月28日 0時 0分更新) (Updated at 00:00H on 28 Jun 2020)
(km/h)
21
18
15
12
9
6
3
0
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
27/06/2020
香 港 時 間 (時) Hong Kong Time (Hour)
28/06/2020
KPC
© 香港天文台 Hong Kong Observatory

Appendix M
Monitoring Data (Noise)

Location: Yau Ma Tei Catholic Primary School (Hoi Wang Road) (W-N1A)

Monitoring date: 3, 9, 15, 20, 26 June 2020

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

Other Factors Nearby traffic, construction work from West Kowloon Government Offices, school activities

Noise Monitoring data:

Date	Weather	Start Time - End Time	L_{eq}	L_{10}	L_{90}	Wind speed (m/s)
03/06/2020	Sunny	11:30 - 12:00	61.5	64.5	57.9	3.6
09/06/2020	Cloudy	11:32 - 12:02	61.8	64.3	59.1	2.8
15/06/2020	Sunny	13:16 - 13:46	61.3	64.2	58.1	2.4
20/06/2020	Sunny	12:30 - 13:00	62.1	64.3	57.6	1.7
26/06/2020	Cloudy	9:48 - 10:18	61.1	62.4	59.5	3.3

Location: Hydan Place (W-N18)

Monitoring date: 3, 9, 15, 20, 26 June 2020

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

Other Factors Nearby traffic

Noise Monitoring data:

Date	Weather	Start Time	-	End Time	L_{eq}	L_{10}	L_{90}	Wind speed (m/s)
03/06/2020	Sunny	9:50	-	10:20	71.8	73.9	69.8	3.1
09/06/2020	Cloudy	13:15	-	13:45	68.9	72.1	66.6	1.8
15/06/2020	Sunny	11:23	-	11:53	70.5	72.9	67.2	3.1
20/06/2020	Sunny	10:45	-	11:15	69.9	71.8	67.6	2.5
26/06/2020	Cloudy	12:15	-	12:45	69.6	71.6	67.6	3.2

Location: Prosperous Garden Block 1 (W-N25A),

Monitoring date: 3, 9, 15, 20, 26 June 2020

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

Other Factors Nearby traffic

Noise Monitoring data:

Date	Weather	Start Time	-	End Time	L_{eq}	L_{10}	L_{90}	Wind speed (m/s)
03/06/2020	Sunny	10:43	-	11:13	69.0	70.5	66.9	2.2
09/06/2020	Cloudy	12:27	-	12:57	68.5	70.7	66.0	2.2
15/06/2020	Sunny	10:30	-	11:00	68.0	70.4	66.1	3.9
20/06/2020	Sunny	10:00	-	10:30	69.2	71.3	67.2	2.9
26/06/2020	Cloudy	11:27	-	11:57	70.5	72.1	68.6	2.5

Location: The Coronation Tower 1 (W-P11),

Monitoring date: 3, 9, 15, 20, 26 June 2020

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

Other Factors Nearby traffic

Noise Monitoring data:

Date	Weather	Start Time	-	End Time	L_{eq}	L_{10}	L_{90}	Wind speed (m/s)
03/06/2020	Sunny	12:28	-	12:58	68.9	71.2	63.6	2.5
09/06/2020	Cloudy	10:31	-	11:01	68.3	70.4	65.5	2.1
15/06/2020	Sunny	12:20	-	12:50	69.3	71.0	64.9	3.1
20/06/2020	Sunny	14:00	-	14:30	68.9	71.0	65.3	4.2
26/06/2020	Cloudy	10:38	-	11:08	68.3	69.8	66.7	2.6

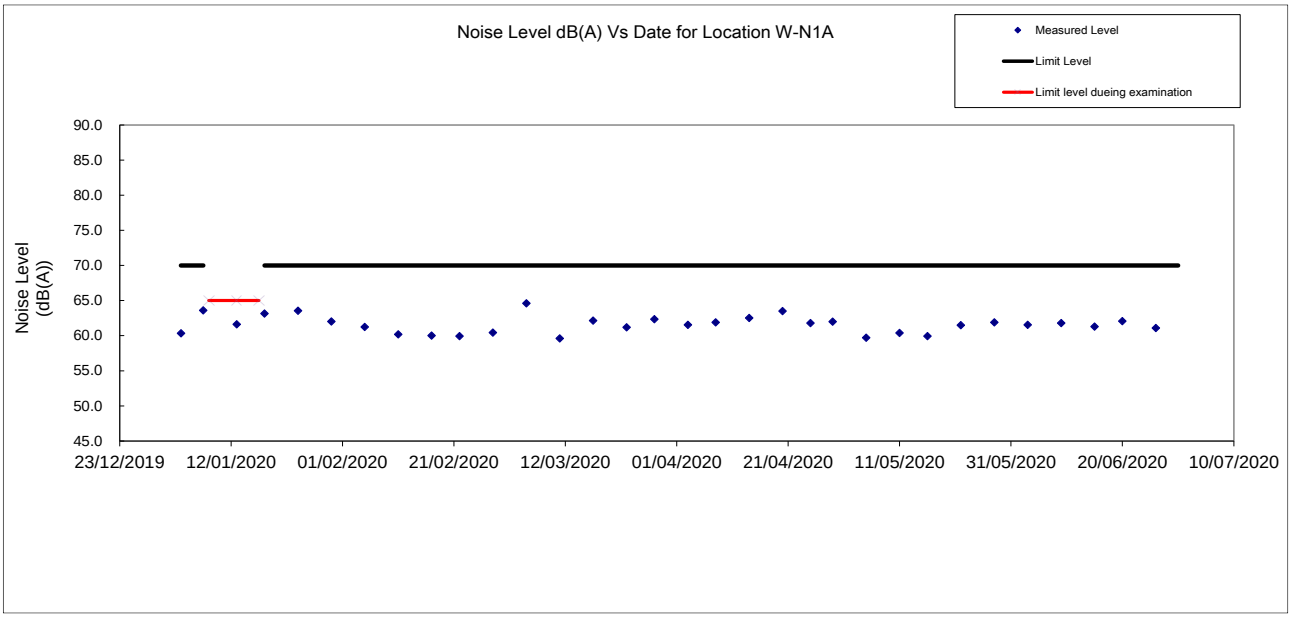


Figure 1: Graphical Illustration of Measured Noise Levels at W-N1A

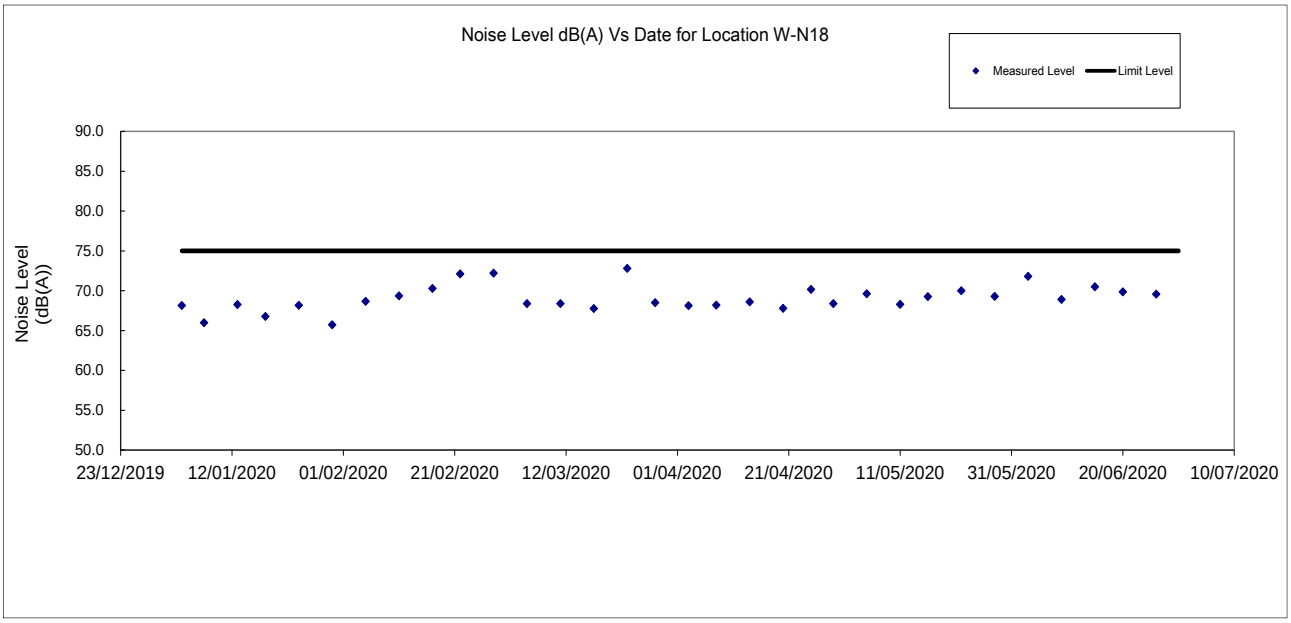


Figure 2: Graphical Illustration of Measured Noise Levels at W-N18

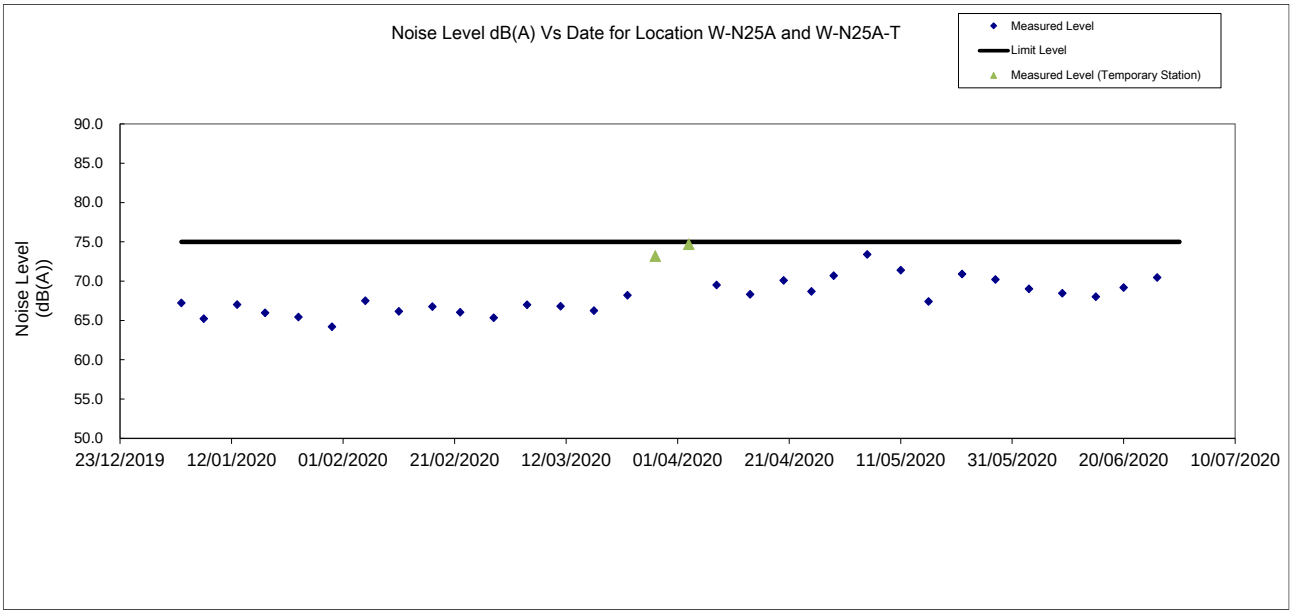


Figure 3: Graphical Illustration of Measured Noise Levels at W-N25A

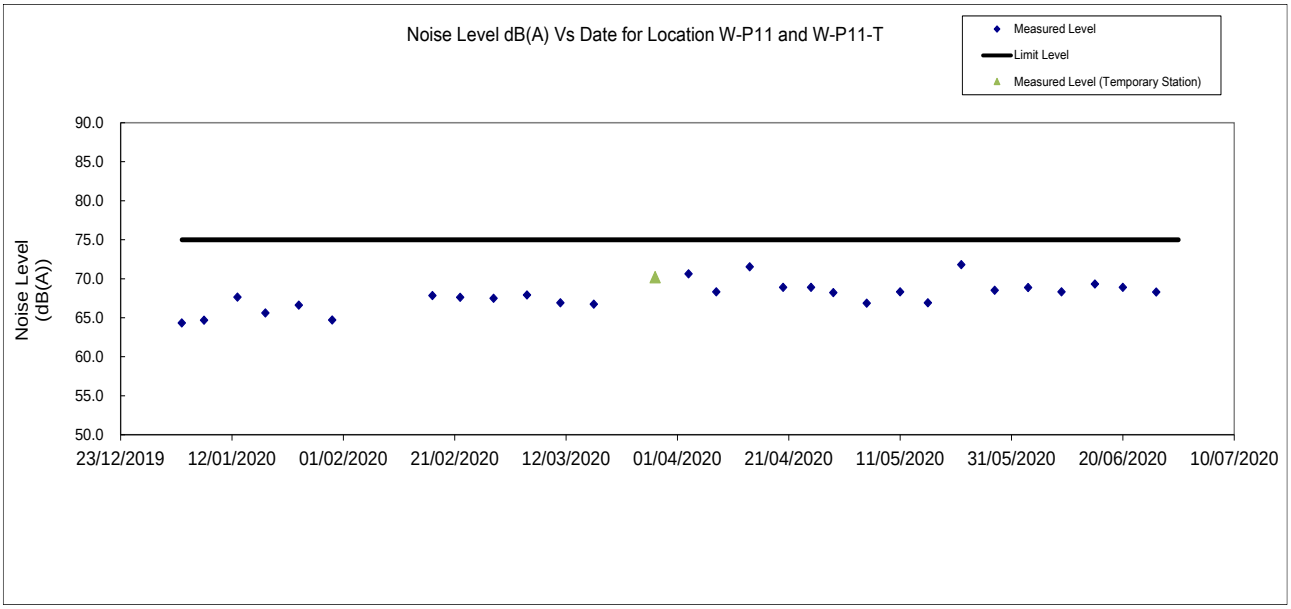


Figure 4: Graphical Illustration of Measured Noise Levels at W-P11

Appendix N
Waste Flow Table

Monthly Summary Waste Flow Table

Name of Department: Highways Department **Contract No. / Works Order No.: HY/2014/20**

Monthly Summary Waste Flow Table for June 2020

[to be submitted not later than the 15th day of each month following reporting month] (All quantities shall be rounded off to 1 decimal place.)

Month		Actual Quantities of Inert Construction Waste Generated Monthly				
	(a)=(b)+(c)+(d)+(e)+ (f)+ (g)+ (h)+ (i)+ (j)+ (k) 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	(f) Imported Fill
	(in 'tonnes)	(in 'tonnes)	(in 'tonnes)	(in 'tonnes)	(in 'tonnes)	(in 'tonnes)
2018	15.7	0.0	0.0	0.0	0.0	0.0
2019	71691.8	0.0	5534.0	8066.8	57313.6	415.6
Jan-20	7808.4	0.0	0.0	0.0	7795.6	0.0
Feb-20	8356.5	0.0	0.0	0.0	8331.5	0.0
Mar-20	14361.3	0.0	3747.0	0.0	10589.5	0.0
Apr-20	20033.4	0.0	2042.6	9038.3	8915.2	0.0
May-20	12707.4	0.0	0.0	7993.1	4667.4	0.0
Jun-20	15318.2	0.0	0.0	7583.1	7704.7	0.0
Sub-total	78585.2	0.0	5789.6	24614.5	48003.8	0.0
Jul-20						
Aug-20						
Sep-20						
Oct-20						
Nov-20						
Dec-20						
Total	78585.2	0.0	5789.6	24614.5	48003.8	0.0

Month	Actual Quantities of Non-inert Construction Waste Generated Monthly								
	(g) Metals		(h) Paper/ cardboard packaging		(i) Plastics		(j) Chemical Waste		(k) Others, e.g. General Refuse disposed at Landfill
	(in '000kg)		(in '000kg)		(in '000kg)		(in '000kg)		(in 'tonnes)
	generated	recycled	generated	recycled	generated	recycled	generated	recycled	generated
2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.7
2019	0.0	106.0	0.0	0.2	0.0	1.5	2.1	0.0	252.0
Jan-20	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	11.9
Feb-20	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	24.6
Mar-20	0.8	0.0	0.1	0.0	0.6	0.0	0.0	0.0	23.3
Apr-20	4.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0	32.7
May-20	14.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	32.7
Jun-20	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	30.2
Sub-total	19.4	0.0	0.3	0.0	1.4	0.0	0.9	0.0	155.4
Jul-20									
Aug-20									
Sep-20									
Oct-20									
Nov-20									
Dec-20									
Total	19.4	0.0	0.3	0.0	1.4	0.0	0.9	0.0	155.4

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

Statistical Summary of Exceedances

Air Quality			
Location	**Action Level**	**Limit Level**	**Total**
W-A1	0	0	0
W-A6	0	0	0
Noise			
Location	**Action Level**	**Limit Level**	**Total**
W-N1A	0	0	0
W-N18	0	0	0
W-N25A	0	0	0
W-P11	0	0	0

Statistical Summary of Environmental Complaints

Reporting Period	**Environmental Complaint Statistics**		
	Frequency	**Cumulative**	**Complaint Nature**
1 June 2020-30 June 2020	0	0	N/A

Statistical Summary of Environmental Non-compliance

Reporting Period	**Environmental Non-compliance Statistics**		
	Frequency	**Cumulative**	**Details**
1 June 2020-30 June 2020	0	0	N/A

Statistical Summary of Environmental Summons

Reporting Period	**Environmental Summons Statistics**		
	Frequency	**Cumulative**	**Details**
1 June 2020-30 June 2020	0	0	N/A

Statistical Summary of Environmental Prosecution

Reporting Period	**Environmental Prosecution Statistics**		
	Frequency	**Cumulative**	**Details**
1 June 2020-30 June 2020	0	0	N/A

Appendix P
Monitoring Schedule of the Coming Month

Impact Monitoring Schedule for YMTW

Jul-20						
Sun	Mon	Tue	Wed	Thur	Fri	Sat
			1	2	3	4
				Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11,W-N18 & W-N25A		
5	6	7	8	9	10	11
		Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11,W-N18 & W-N25A				
12	13	14	15	16	17	18
	Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11,W-N18 & W-N25A					Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11,W-N18 & W-N25A
19	20	21	22	23	24	25
					Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11,W-N18 & W-N25A	
26	27	28	29	30	31	
				Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11,W-N18 & W-N25A		