Vol. 4 of 5

EP-457/2013/D

Central Kowloon Route

Yau Ma Tei West

Contract No. HY/2014/20

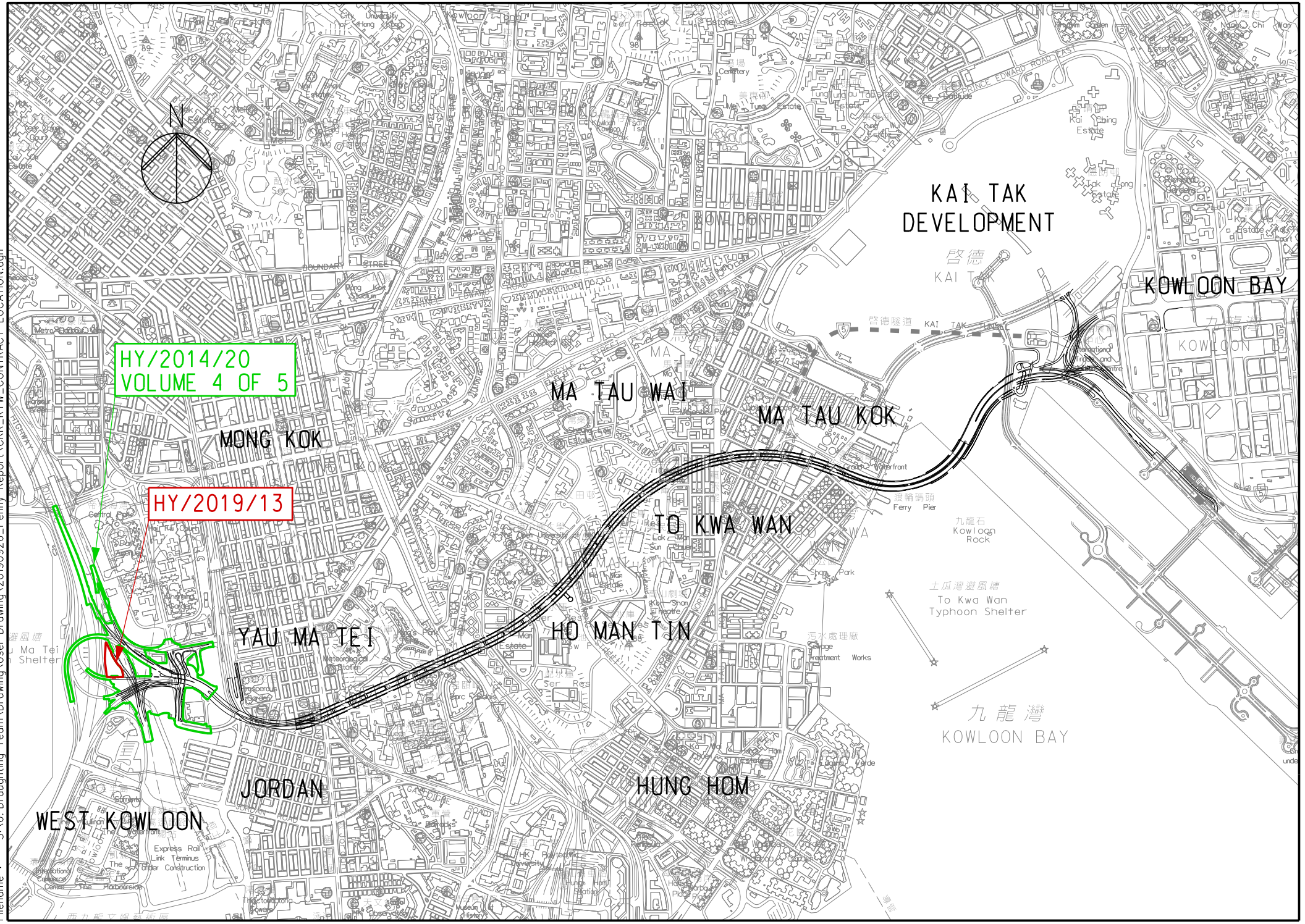
&

Buildings, Electrical and Mechanical Works

Contract No. HY/2019/13

(Yau Ma Tei West area)

October 2021



Central Kowloon Route

Yau Ma Tei West

Contract No. HY/2014/20

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

ERM

Environmental Permit No. EP-457/2013/D

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.33 (October 2021)
Date of Report:	10 November 2021 (Rev. 1)
Date received by IEC:	10 November 2021

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/D.

Ms Mandy To Date: 10 November 2021

Independent Environmental Checker

Our ref: 0436942_IEC Verification Cert_YMTW_Monthly EM&A Rpt No.33.docx

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Build King – SK ecoplant Joint Venture

Central Kowloon Route Contract HY/2014/20

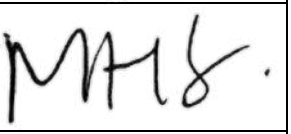
Section of Yau Ma Tei West Section

Monthly EM&A Report No. 33

(Period from 1 to 31 October 2021)

Rev. 1

(10 November 2021)

	Name	**Signature**
Prepared by	Katrina K. S. Chui (Assistant Environmental Consultant)	
Checked & Reviewed by	Sally H. S. Mok (Environmental Consultant)	
Approved & Certified by	Kevin W. M. Li (Environmental Team Leader)	

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EXECUTIVE SUMMARY

A.1 Build King – SK ecoplant 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 33rd monthly Environmental Monitoring and Audit (EM&A) report presenting the EM&A works carried out during the period from 1 October 2021 to 31 October 2021.

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
- Socket H-pile at Portion 1B, 1D, 1E, 1F and 1G
- ELS and Excavation Works for Vent Adit Ch 90~130 (Zone 3) at Portion 1E
- Construction of Noise Barrier C02, C03 & S01 (along Lin Cheung Road) at Portion 1E
- Bridge Deck Construction at Bridge C2 (Existing Pier T1 to C2P1) at Portion 1E
- Bridge Deck Construction at Bridge C (Existing Pier H4 to CP1) at Portion 1E
- Bridge Deck Construction at Bridge G at Portion 1B
- GRP Pipe Installation for New Sewerage System including Manhole Construction and Flow Diversion Works at Portion 17, 1B, 1D and 1G
- ELS & Excavation Works for Vent. Adit Ch 240~250 (Zone A2) at Portion 1D
- ELS and Excavation Works (Segment 4, 7, 10 to 12) for Vent. Adit and Depressed Road Construction including Escape Route Staircase No.1 to 3 at Portion 1F and 10
- Vent Adit Ch 290~310 at Seg. 4 & 7 at Portion 1F
- Vent Adit Ch 310~340 at Seg. 7 & 10 at Portion 1F
- Pile Cap Construction along Hoi Wang Road (Segment 5, 6, 7, 8 and 9) at Portion 1D

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-P11, W-N18, W-N25A	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 Dust and noise monitoring on 9 October 2021 was rescheduled to 11 October 2021 due to adverse weather.

A.5 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 15 and 28 October 2021. Details of the audit findings and implementation

status are presented in Section 5.

A.6 Joint weekly site inspections were conducted by representatives of the Contractor, Engineer and Contractor's ET on 7, 15, 21 and 28 October 2021. One joint site inspection with IEC also undertaken on 21 October 2021. Details of the audit findings and implementation status are presented in Section 5.

A.7 Details of waste management are presented in Section 3.

A.8 No exceedance of the Action and Limit Levels of 1-hour TSP, 24-hour TSP and construction noise monitoring was recorded during the reporting month.

A.9 No complaint or non-compliance was reported in the reporting month.

A.10 No notification of summon or prosecution was received in this reporting period.

A.11 A summary of the construction activities provided by Main Contractor in the next reporting month is listed below:

Construction Activities to be undertaken

- Socket H-Pile at Portion 1D along Hoi Wang Road and Bridge B & C
- Road D Structure I at Portion 1E
- ELS and Excavation Works for Vent. Adit Ch 90~130 (Zone 3) at Portion 1E
- Construction of Noise Barrier C02, C03 & S01 (along Lin Cheung Road) at Portion 1E
- Bridge Deck Construction at Bridge C2 (from existing Pier T1 to C2P1) at Portion 1E
- Bridge Deck Construction at Bridge C (Existing Pier H4 to CP1) at Portion 1E
- Bridge Deck Construction at Bridge G at Portion 1B
- ELS & Excavation Works for Vent. Adit Ch 240~250 (Zone A2) at Portion 1D
- ELS and Excavation Works (Segment 4, 7, 10 to 12) for Vent. Adit and Depressed Road Construction including Escape Route Staircase No.1 to 2 at Portion 1F and 10
- RC Works for Vent. Adit Ch 290~310 (Segment 4 & 7) at Portion 1F
- Pile Cap Construction along Hoi Wang Road (Segment 5, 6, 7, 8 and 9) at Portion 1D

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/D) was issued by EPD on 15 June 2021.

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
• Socket H-pile at Portion 1B, 1D, 1E, 1F and 1G
• ELS and Excavation Works for Vent Adit Ch 90~130 (Zone 3) at Portion 1E
• Construction of Noise Barrier C02, C03 & S01 (along Lin Cheung Road) at Portion 1E
• Bridge Deck Construction at Bridge C2 (Existing Pier T1 to C2P1) at Portion 1E
• Bridge Deck Construction at Bridge C (Existing Pier H4 to CP1) at Portion 1E
• Bridge Deck Construction at Bridge G at Portion 1B
• GRP Pipe Installation for New Sewerage System including Manhole Construction and Flow Diversion Works at Portion 17, 1B, 1D and 1G
• ELS & Excavation Works for Vent. Adit Ch 240~250 (Zone A2) at Portion 1D
• ELS and Excavation Works (Segment 4, 7, 10 to 12) for Vent. Adit and Depressed Road Construction including Escape Route Staircase No.1 to 3 at Portion 1F and 10
• Vent Adit Ch 290~310 at Seg. 4 & 7 at Portion 1F
• Vent Adit Ch 310~340 at Seg. 7 & 10 at Portion 1F
• Pile Cap Construction along Hoi Wang Road (Segment 5, 6, 7, 8 and 9) at Portion 1D

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/D	15 Jun 2021	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				
WPN5213-229-B2527-02	31 Oct 2018	End of Project	Valid	-
Billing Account for Disposal of Construction Waste				
7032430	2 Nov 2018	End of Project	Valid	-
Disposal of Special Waste at Landfills Admission Ticket				
16460	1 Oct 2021	31 Mar 2022	Valid from 1 Oct 2021	
Construction Noise Permit				
GW-RE0557-21	4 Jun 2021	28 Nov 2021	Valid	General Site Activities
GW-RE1007-21	17 Oct 2021	26 Dec 2021	Valid from 17 Oct 2021	Erection of Portal Frame at Lin Cheung Road
GW-RE1002-21	14 Oct 2021	31 Dec 2021	Valid from 14 Oct 2021	Preparation Works for Erecting Portal Frame at Lin Cheung Road
GW-RE0996-21	6 Oct 2021	30 Dec 2021	Valid from 6 Oct 2021	Enhancement Works of OVDS at Lin Cheung Road Underpass Northbound

Permit/ Licences/	Valid Period		Status	Remark
GW-RE1033-21	22 Oct 2021	31 Dec 2021	Valid from 22 Oct 2021	Project Signboard Maintenance Works at West Kowloon Highway Slip Road
GW-RE0639-21	12 Jul 2021	9 Oct 2021	Valid until 9 Oct 2021	Preparation for erection of portal frame at Lin Cheung Road
Marine Dumping Permit				
EP/MD/22-061	1 Oct 2021	31 Mar 2022	Valid from 1 Oct 2021	Type 1- Open Sea Disposal
EP/MD/22-060	1 Oct 2021	31 Oct 2021	Valid from 1 Oct 2021 and Valid until 31 Oct 2021	Type 2- Confined Marine Disposal

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/D) 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/D for the Project

EP Condition (EP-457/2013/D)	Submission	Submission date
Condition 3.4	Monthly EM&A Report (Sep 2021)	13 Oct 2021

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

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

Construction activities undertaken	Remarks on progress
• Pre-drilling Works at Portion 1B, 1D, 1E and 1F	•97% completion
• Socket H-pile at Portion 1B, 1D, 1E, 1F and 1G	•70% completion
• ELS and Excavation Works for Vent Adit Ch 90~130 (Zone 3) at Portion 1E	•70% completion
• Construction of Noise Barrier C02, C03 & S01 (along Lin Cheung Road) at Portion 1E	•35% completion
• Bridge Deck Construction at Bridge C2 (Existing Pier T1 to C2P1) at Portion 1E	•98% completion
• Bridge Deck Construction at Bridge C (Existing Pier H4 to CP1) at Portion 1E	•35% completion
• Bridge Deck Construction at Bridge G at Portion 1B	•60% completion
• GRP Pipe Installation for New Sewerage System including Manhole Construction and Flow Diversion Works at Portion 17, 1B, 1D and 1G	•Completed
• ELS & Excavation Works for Vent. Adit Ch 240~250 (Zone A2) at Portion 1D	•30% completion
• ELS and Excavation Works (Segment 4, 7, 10 to 12) for Vent. Adit and Depressed Road Construction at Portion 1F and 10	• 65% completion
• Vent Adit Ch 290~310 at Seg. 4 & 7 at Portion 1F	• 60% completion
• Vent Adit Ch 310~340 at Seg. 7 & 10 at Portion 1F	• 25% completion
• Pile Cap Construction along Hoi Wang Road at Portion 1D	• 15% completion

2.3. The drawing showing the the project layout and the location of the monitoring station and environmental sensitive receivers are attached in Appendix A and Appendix K. Co-ordinates of the 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 certificates of dust monitoring equipment are 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	761174	1 Jul 2021
	LD-5R Digital Dust Indicator	761173	1 Jul 2021
24-hour TSP	TE-5170X High Volume Sampler	1084	23 Sep 2021 and 11, 26 Oct 2021
	TE-5170X High Volume Sampler	1050	23 Sep 2021 and 11, 26 Oct 2021
	TE-5028A Calibration Kit	3702	3 Aug 2021

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 when the information are not available from HKO.

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

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

Table 3.2 Monitoring Equipment Used in Monitoring

Monitoring Equipment	Serial Number	Date of Calibration
Nti XL2 Sound Level Meter	A2A-13548-E0	12 Dec 2020
Nti XL2 Sound Level Meter	A2A-13661-E0	23 Sep 2021
Nti XL2 Sound Level Meter	A2A-17638-E0	24 Mar 2021
Svantek 33B Acoustic Calibrator	83042	20 Mar 2021
Scarlet ST-120 Sound Level Calibrator	200504747	31 Dec 2020
Rion NC-74 Sound Level Calibrator	34504770	17 Nov 2020
Pulsar 105 Acoustic Calibrator	63705	7 Aug 2021

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^{o} 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℃ and not varied by more than ±3℃; the relative humidity (RH)was 40%; and
- Acumen Laboratory and Testing Limited and ALS Technichem (HK) Pty Limited, as HOKLAS accredited laboratory, implemented comprehensive quality assurance and quality control programmes on the filters.

3.3.5. Field Monitoring

- The power supply was checked to ensure that the HVS was working properly;
- The filter holder and area surrounding the filter were cleaned;
- The filter holder was removed by loosening the foul bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;

- The shelter lid was closed and secured with an aluminum strip;
- The HVS was warmed- up for about 5 minutes to establish run- temperature conditions;
- A new flow rate record sheet was inserted into the flow recorder;
- The flow rates of the HVS was checked and adjusted to between 0.64-1.52m^3min^{-1}, which was within the range specified in the EM&A Manual (i.e. 0.6- 1.7 m^3min^{-1});
- The programmable timer was set for a sampling period of 24 hours, 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 when the information are not available 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 stations 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

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	Leq 30 min, L10 and L90 as reference.	Once per week (0700-1900)

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 stations in the reporting month are summarised in Table 3.6.

Table 3.6 Observation at Dust Monitoring Stations

Monitoring Station	Major Dust Source
W-A1	Nearby traffic
W-A6	Nearby traffic

3.6.2. Air quality impact monitoring for the reporting month was carried out on 4, 11, 15, 21 and 27 October 2021.

3.6.3. Dust monitoring on 9 October 2021 was rescheduled to 11 October 2021 due to adverse weather.

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

Table 3.7 Summary of 1-hour TSP Monitoring Results

Monitoring Location	Range(μg/m^3)	Action Level(μg/m3)	Limit Level(μg/m3)
W-A1	55-67	319	500
W-A6	60-74	306	500

Table 3.8 Summary of 24-hour TSP Monitoring Results

Monitoring Location	Range(μg/m^3)	Action Level(μg/m3)	Limit Level(μg/m3)
W-A1	23-74	167	260
W-A6	29-93	166	260

Noise

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

Table 3.9 Observation at Noise Monitoring Stations

Monitoring Station	Major Noise Source
W-N1A	Nearby traffic
W-N18	Nearby traffic
W-N25A	Nearby traffic
W-P11	Nearby traffic

3.6.6. The construction noise impact monitoring for the reporting month was carried out on 4, 11, 15, 21 and 27 October 2021.

3.6.7. Noise monitoring on 9 October 2021 was rescheduled to 11 October 2021 due to adverse weather.

3.6.8. The result for noise monitoring is summarized in Table 3.10. The measurement data are shown in Appendix M.

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	$L_{eq\ 30min}$	60.6-61.1	62.2-63.9	57.8-59.5	When one documented complaint is received	70dB(A) or 65 dB(A) during examination
	W-N18		70.8-71.9	73.8-75.1	69.2-69.9		75dB(A)#
	W-N25A		70.2-71.3	73.5-75.1	69.0-69.5		
	W-P11		69.5-71.2	71.4-74.4	67.0-68.9		

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.

2. No examination was held at W-N1A so limit levels for all monitoring days were 70 dB(A).

Waste management

3.6.9. 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)
Oct-2021	12980.9	0.0	36.4	0.0	0.3	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 Event and Action Plan in Appendix D and Appendix E shall be carried out.

4.3. No exceedance of the Action and Limit Levels of 1-hour TSP, 24-hour TSP and construction noise monitoring was recorded during the reporting month.

4.4. No complaint 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 7, 15, 21 and 28 October 2021, along with bi-weekly inspection of the implementation of landscape and visual mitigation measures conducted on 15 and 28 October 2021.

5.2. One joint site inspection with IEC also undertaken on 21 October 2021. 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
7 October 2021	1. The chemical labels for chemical containers at Portion 1E were missing. 2. The NRMM label for the generator at Portion 1D was not in good condition. 3. The drip tray for chemical containers at Portion 1D was missing.	1. The chemical labels had been displayed. 2. NRMM label had been replaced. 3. The drip tray for chemical containers at Portion 1D had been provided.
15 October 2021	1. The NRMM label of the excavator at Portion 1D was missing. 2. The chemical label and drip tray for chemical containers at depressed road were missing.	1. NRMM label had been displayed. 2. The chemical containers had been removed.
21 October 2021	1. The NRMM labels of the powerpack and excavator at Portion 1F were not in good condition. 2. The chemical label for chemical container at Zone 3 was missing.	1. NRMM labels for the powerpack and excavator at Portion 1F had been replaced. 2. The chemical label had been displayed.
28 October 2021	1. The chemical labels and drip trays for chemical containers at Portion 1G were missing. 2. The NRMM label of the excavator at Portion 1D was missing.	1. The chemical containers had been removed. 2. NRMM label had been displayed.

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:

- Socket H-Pile at Portion 1D along Hoi Wang Road and Bridge B & C
- Road D Structure I at Portion 1E
- ELS and Excavation Works for Vent. Adit Ch 90~130 (Zone 3) at Portion 1E
- Construction of Noise Barrier C02, C03 & S01 (along Lin Cheung Road) at Portion 1E
- Bridge Deck Construction at Bridge C2 (from existing Pier T1 to C2P1) at Portion 1E
- Bridge Deck Construction at Bridge C (Existing Pier H4 to CP1) at Portion 1E
- Bridge Deck Construction at Bridge G at Portion 1B
- ELS & Excavation Works for Vent. Adit Ch 240~250 (Zone A2) at Portion 1D
- ELS and Excavation Works (Segment 4, 7, 10 to 12) for Vent. Adit and Depressed Road Construction including Escape Route Staircase No.1 to 2 at Portion 1F and 10
- RC Works for Vent. Adit Ch 290~310 (Segment 4 & 7) at Portion 1F
- Pile Cap Construction along Hoi Wang Road (Segment 5, 6, 7, 8 and 9) at Portion 1D

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 33rd monthly EM&A Report presents the EM&A works undertaken during the period from 1 October 2021 to 31 October 2021 in accordance with the EM&A Manual and the requirement under EP- 457/2013/D.

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 Levels was recorded for construction noise and air quality impact monitoring during the reporting month.

7.3. Dust and noise monitoring on 9 October 2021 was rescheduled to 11 October 2021 due to adverse weather.

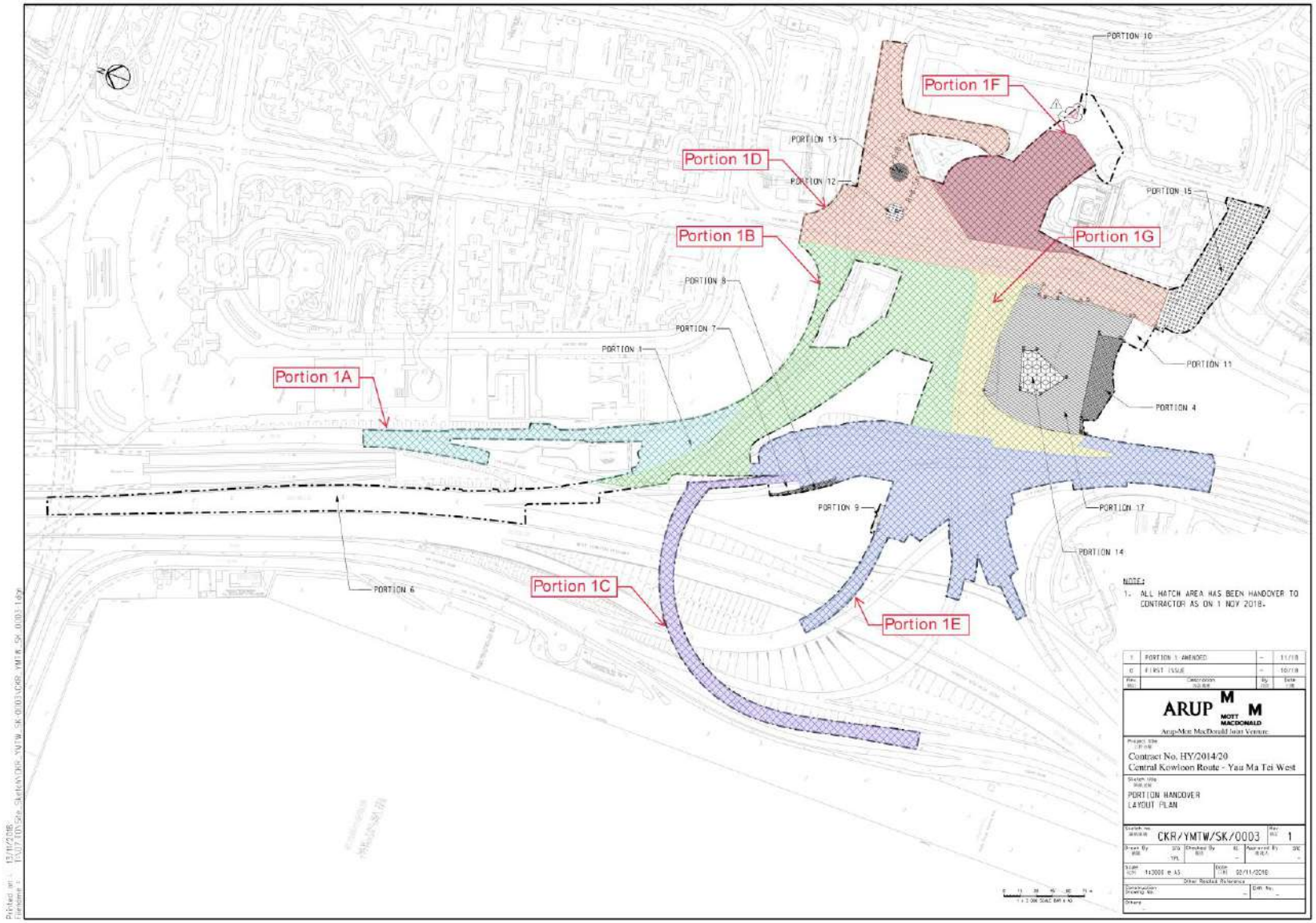
7.4. Weekly environmental site inspections were conducted during the reporting period. Joint site inspection with IEC were carried out on 21 October 2021. Minor deficiency was observed during site inspection and was rectified within the specified deadlines. The environmental performance of the Project was therefore considered satisfactory.

7.5. No complaint or non-compliance was reported in the reporting month.

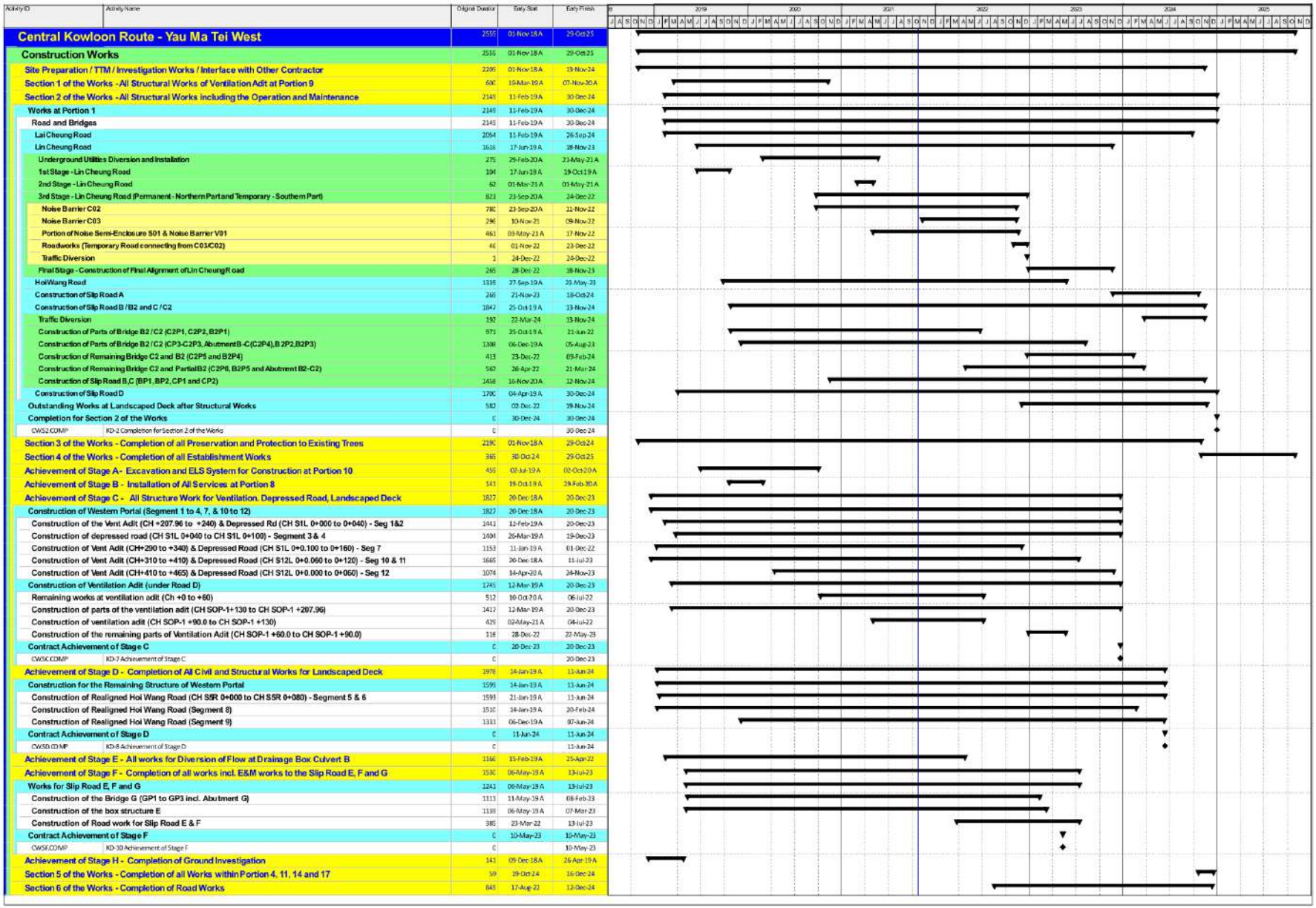
7.6. No notification of summons or prosecution was received in the reporting month.

7.7. 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.
ARUP
MOTT MACDONALD
Arup-Mott MacDonald Joint Venture
Contract No. HY/2014/20
Central Kowloon Route - Yau Ma Tei West
PORTION HANDOVER
LAYOUT PLAN
CKR/YMTW/SK/0003

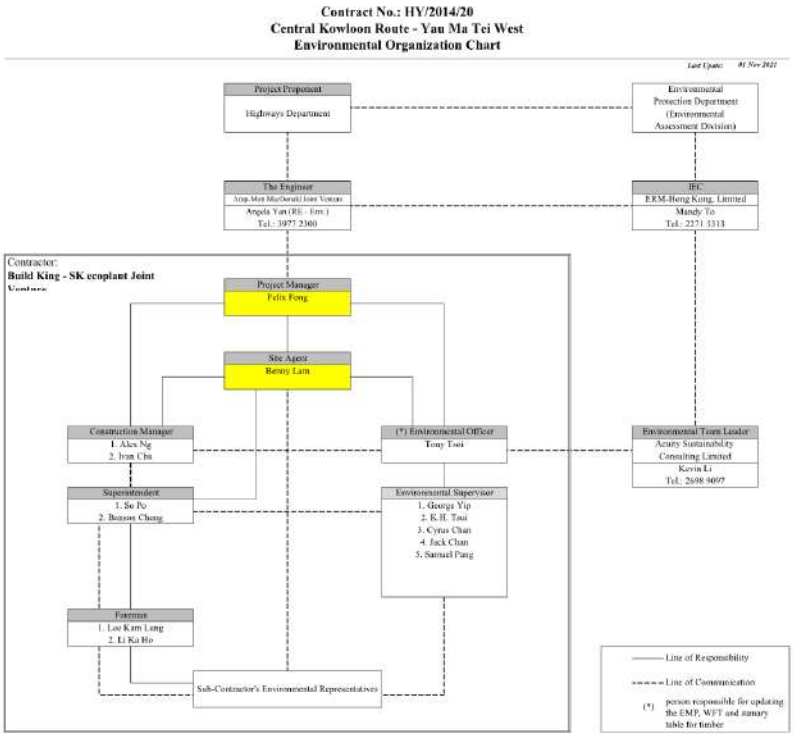
Appendix B
Construction Programme



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		2516	01-Nov-18 A	29-Oct-25
Site Preparation / TTM / Investigation Works / Interface with Other Contractor		2209	01-Nov-18 A	19-Nov-24
Section 1 of the Works - All Structural Works of Ventilation Adit at Portion 9		600	18-Mar-19 A	07-Nov-20 A
Section 2 of the Works - All Structural Works including the Operation and Maintenance		2143	11-Feb-19 A	30-Dec-24
Works at Portion 1		2143	11-Feb-19 A	30-Dec-24
Road and Bridges		2143	11-Feb-19 A	30-Dec-24
Lai Cheung Road		2054	11-Feb-19 A	26-Sep-24
Lin Cheung Road		1616	17-Jun-19 A	18-Nov-23
Underground Utilities Diversion and Installation		275	29-Feb-20 A	23-May-21 A
1st Stage - Lin Cheung Road		104	17-Jun-19 A	19-Oct-19 A
2nd Stage - Lin Cheung Road		62	01-Mar-21 A	01-May-21 A
3rd Stage - Lin Cheung Road (Permanent - Northern Part and Temporary - Southern Part)		823	23-Sep-20 A	24-Dec-22
Noise Barrier C02		780	23-Sep-20 A	11-Nov-22
Noise Barrier C03		296	10-Nov-21	09-Nov-22
Portion of Noise Semi-Enclosure S01 & Noise Barrier V01		461	03-May-21 A	17-Nov-22
Roadworks (Temporary Road connecting from C01&C02)		46	01-Nov-22	23-Dec-22
Traffic Diversion		1	24-Dec-22	24-Dec-22
Final Stage - Construction of Final Alignment of Lin Cheung Road		265	28-Dec-22	18-Nov-23
Hoi Wang Road		1335	27-Sep-19 A	20-May-23
Construction of Slip Road A		269	21-Nov-23	18-Oct-24
Construction of Slip Road B / B2 and C / C2		1847	25-Oct-19 A	13-Nov-24
Traffic Diversion		192	22-Mar-24	13-Nov-24
Construction of Parts of Bridge B2 / C2 (C2P1, C2P2, B2P1)		971	25-Oct-19 A	21-Jun-22
Construction of Parts of Bridge B2 / C2 (CP3-C2P3, Abutment B-C(C2P4), B 2P2, B2P3)		1308	06-Dec-19 A	05-Aug-23
Construction of Remaining Bridge C2 and B2 (C2P5 and B2P4)		413	23-Dec-22	09-Feb-24
Construction of Remaining Bridge C2 and Partial B2 (C2P6, B2P5 and Abutment B2-C2)		567	26-Apr-22	21-Mar-24
Construction of Slip Road B,C (BP1, BP2, CP1 and CP2)		1458	16-Nov-20 A	12-Nov-24
Construction of Slip Road D		1700	04-Apr-19 A	30-Dec-24
Outstanding Works at Landscaped Deck after Structural Works		582	02-Dec-22	19-Nov-24
Completion for Section 2 of the Works		0	30-Dec-24	30-Dec-24
CWS2.COMP	KD-2 Completion for Section 2 of the Works	0		30-Dec-24
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		456	02-Jul-19 A	02-Oct-20 A
Achievement of Stage B - Installation of All Services at Portion 8		143	19-Oct-19 A	29-Feb-20 A
Achievement of Stage C - All Structure Work for Ventilation, Depressed Road, Landscaped Deck		1827	20-Dec-18 A	20-Dec-23
Construction of Western Portal (Segment 1 to 4, 7, & 10 to 12)		1827	20-Dec-18 A	20-Dec-23
Construction of the Vent Adit (CH +207.96 to +240) & Depressed Rd (CH S1L 0+000 to 0+040) - Seg 1&2		1441	12-Feb-19 A	20-Dec-23
Construction of depressed road (CH S1L 0+040 to CH S1L 0+100) - Segment 3 & 4		1404	26-Mar-19 A	19-Dec-23
Construction of Vent Adit (CH+290 to +340) & Depressed Road (CH S1L 0+0.100 to 0+160) - Seg 7		1153	11-Jan-19 A	01-Dec-22
Construction of Vent Adit (CH+310 to +410) & Depressed Road (CH S12L 0+0.060 to 0+120) - Seg 10 & 11		1665	20-Dec-18 A	11-Jul-23
Construction of Vent Adit (CH+410 to +465) & Depressed Road (CH S12L 0+0.000 to 0+060) - Seg 12		1074	14-Apr-20 A	24-Nov-23
Construction of Ventilation Adit (under Road D)		1745	12-Mar-19 A	20-Dec-23
Remaining works at ventilation adit (Ch +0 to +60)		512	10-Oct-20 A	06-Jul-22
Construction of parts of the ventilation adit (CH SOP-1+130 to CH SOP-1 +207.96)		1417	12-Mar-19 A	20-Dec-23
Construction of ventilation adit (CH SOP-1 +90.0 to CH SOP-1 +130)		429	02-May-21 A	04-Jul-22
Construction of the remaining parts of Ventilation Adit (CH SOP-1 +60.0 to CH SOP-1 +90.0)		116	28-Dec-22	22-May-23
Contract Achievement of Stage C		0	20-Dec-23	20-Dec-23
CWSC.COMP	KD-7 Achievement of Stage C	0		20-Dec-23
Achievement of Stage D - Completion of All Civil and Structural Works for Landscaped Deck		1976	14-Jan-19 A	11-Jun-24
Construction for the Remaining Structure of Western Portal		1591	14-Jan-19 A	11-Jun-24
Construction of Realigned Hoi Wang Road (CH SSR 0+000 to CH SSR 0+080) - Segment 5 & 6		1593	21-Jan-19 A	11-Jun-24
Construction of Realigned Hoi Wang Road (Segment 8)		1510	14-Jan-19 A	20-Feb-24
Construction of Realigned Hoi Wang Road (Segment 9)		1331	06-Dec-19 A	07-Jun-24
Contract Achievement of Stage D		0	11-Jun-24	11-Jun-24
CWSD.COMP	KD-8 Achievement of Stage D	0		11-Jun-24
Achievement of Stage E - All works for Diversion of Flow at Drainage Box Culvert B		1166	15-Feb-19 A	25-Apr-22
Achievement of Stage F - Completion of all works incl. E&M works to the Slip Road E, F and G		1530	06-May-19 A	13-Jul-23
Works for Slip Road E, F and G		1242	06-May-19 A	13-Jul-23
Construction of the Bridge G (GP1 to GP3 incl. Abutment G)		1113	11-May-19 A	08-Feb-23
Construction of the box structure E		1139	06-May-19 A	07-Mar-23
Construction of Road work for Slip Road E & F		385	23-Mar-22	13-Jul-23
Contract Achievement of Stage F		0	10-May-23	10-May-23
CWSF.COMP	KD-10 Achievement of Stage F	0		10-May-23
Achievement of Stage H - Completion of Ground Investigation		143	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	19-Oct-24	16-Dec-24
Section 6 of the Works - Completion of Road Works		845	17-Aug-22	12-Dec-24

Appendix C
Project Organization Chart

Project O-Chart



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	3977 2300
Independent Environmental Checker	ERM-Hong Kong, Limited	Mandy To	IEC	2271 3313
Environmental Team Leader	Acuity Sustainability Consulting Limited	Kevin Li	ETL	2698 9097
Contractor	Build King - SK ecoplant Joint Venture	Felix Fong	Project Manager	3622 8300
		Benny Lam	Site Agent	3622 8300
		Alex Ng	Construction Manager	3622 8300
		Ivan Chu	Construction Manager	3622 8300
		So Po	Superintendent	9588 6977
		Banson Cheng	Superintendent	6112 8807
		Lee Kam Lung	Foreman	9161 0944
		Li Ka Ho	Foreman	9023 9310
		Tony Tsoi	(*) Environmental Officer	5543 4424
		George Yip	Environmental Supervisor	9838 9043
		K.H. Tsui	Environmental Supervisor	9090 9052
		Cyrus Chan	Environmental Supervisor	6186 2039
		Jack Chan	Environmental Supervisor	6577 1021
		Samuel Pang	Environmental Supervisor	9876 9121

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)								

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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

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		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)								

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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

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		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						

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		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						

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		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						

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		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

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S6.9.1.3	W3	<u>Sewage Effluent</u> • Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	• Water Pollution Control Ordinance • TM-DSS	• Implemented
S6.9.1.5	W4	<u>Groundwater from Potential Contaminated Area:</u> • 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

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		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						

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		interceptor.						
S6.9.1.6	W6	<u>Accidental Spillage</u> 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	<u>On-site sorting of C&D material</u> • Geological assessment should be carried out by competent persons on site during excavation to identify materials which are not suitable to use as aggregate in structural concrete (e.g. volcanic rock, Aplite dyke rock, etc.). Volcanic rock and Aplite dyke rock should be separated at the source sites	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

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		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

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		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	<u>C&D Waste</u> • Standard formwork or pre-fabrication should be used as far as practicable in order to minimize the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance 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

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		used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.						
S7.5.1	WM5	<u>Land-based Sediment</u> • 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

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		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.						

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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

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		waste collection service and can supply the necessary storage containers, or be to a reuser of the waste, under approval from EPD.						
S7.5.1	WM7	<u>General Refuse</u> • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes; • A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law. • Aluminum cans are often recovered 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	<u>Excavation of the Contaminated Soil</u> • 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

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<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 rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2">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><td>Locations</td><td>Testing requirement</td><td>Acceptance Criteria</td></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>• Implemented</td></tr>
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		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

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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	<u>Tree Protection & Preservation</u> • Carefully protected during construction. Tree protection measures will be detailed at the Tree Removal Application stage and plans submitted to the relevant Government Department for approval in due course in accordance with ETWB TC no. 3/2006.	Minimize landscape and visual impact	Contractor	Within Project site	Construction stage	• 'Guidelines for Tree Risk Management and Assessment Arrangement on an Area Basis and on a Tree Basis', Greening, Landscape and Tree Management (GLTM) Section, DEVB • Latest recommended horticultural practices from GLTM Section, DEVB	• Implemented
S10.10.1 Table 10.11	LV8	<u>Tree Transplantation</u> • For trees unavoidably affected by the Project that have to be removed, where practical transplantation will be chosen as the top priority method of removal. If this is not possible or practical compensatory planting will be provided	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

Oct-21						
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 Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11 , W-N18 & W-N25A (Rescheduled to 11/10/2021, due to the adverse weather)
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 Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11 , W-N18 & W-N25A	16
17	18	19	20	21 Impact Air monitoring for W-A6 &W-A1 Noise monitoring for W-N1A, W-P11 , W-N18 & W-N25A	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
31						

Remark: The monitoring date 9/10/2021 had been rescheduled to 11/10/2021 due to Typhoon signal 8.

Appendix H
Calibration Certificates
(Air Monitoring)

ACUITY SUSTAINABILITY CONSULTING LIMITED
Website: www.acuityhk.com
Unit C, 11/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon.
Tel.: (852) 2698 6833
Fax.: (852) 2698 9585

Sibata LD-5R K-Factor Verification Test by Total Suspended Particulates HVS Test Report

Verification Test Date:	27-Jun-21	to	1-Jul-21
Next Verification Test Date:	1-Jul-22		
Unit-under-Test- Model No.	Sibata LD-5R		
Unit-under-Test Serial No.	761173		
Our Report Refrence No.	RPT-21-HVS-0003		

Standard Equipment Information			
Verification Equipment Type		Tisch's TSP HVS	Tish HVS Calibrator
Standard Equipment Model No.		TE-5170X	TE-5028
Equipment serial no.	MFC	1049	1050
Last Calibration Date		17-Jun-21	24-Sep-20
Next Calibration Date		17-Aug-21	24-Sep-21

Verification Test No.	Date	Time			K-Factor	Counts/ Minute (R)	Total Counts (TC)	TSP Sample ID No.	Dust Concentration (ug/m3), (C)
		Start-time	End-time	Elapsed Time (in min)	K-Factor (K=C/R)	x-axis			y axis
1	27/6/2021	1254.37	1257.37	180.00	0.00119	27.90	2652	R210872/1	33.33
2	27/6/2021	1258.44	1261.44	180.00	0.00096	61.70	1539	R210872/2	59.26
3	27/6/2021	1262.31	1265.31	180.00	0.00097	10.00	1983	R210872/3	9.72
4	1/7/2021	1265.84	1268.84	180.00	0.00093	78.30	2313	R210887/1	73.15
5	1/7/2021	1269.10	1272.10	180.00	0.00096	14.40	1407	R210887/2	13.89
6	1/7/2021	1272.50	1275.50	180.00	0.00084	28.50	1299	R210887/3	24.07
					0.00098				

K-Factor to be inputted in LD-5R (corrected 1 decimal point): 1.0

By Linear Regression of y on x:

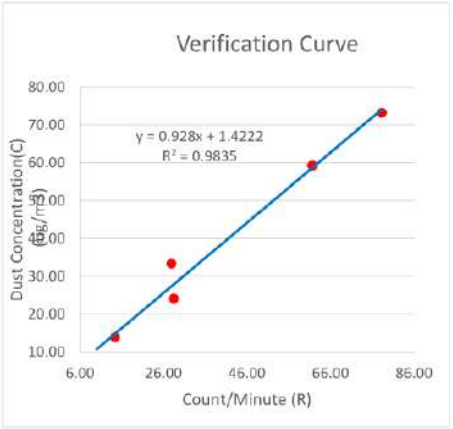
slope, mh= 0.9280

intercept,ch= 1.4222

*Correlation Coefficient,R= 0.9917

Verification Test Result: Strong Correlation, Results were accepted.

* If the Correlation Coefficient, R is <0.5. Checking and Re-verification are required.



Verified By: _____ Date: 20-07-2021

Technical Manager

ACUITY SUSTAINABILITY CONSULTING LIMITED
Website: www.acuityhk.com
Unit C, 1/F, Ford Glory Plaza, Nos. 37-39 Wing Hong Street, Cheung Sha Wan, Kowloon.
Tel.: (852) 2698 6855
Fax.: (852) 2698 9585

Sibata LD-5R K-Factor Verification Test by Total Suspended Particulates HVS Test Report

Verification Test Date:	27-Jun-21	to	1-Jul-21
Next Verification Test Date:	1-Jul-22		
Unit-under-Test- Model No.	Sibata LD-5R		
Unit-under-Test Serial No.	761174		
Our Report Refrence No.	RPT-21-HVS-0004		

Standard Equipment Information			
Verification Equipment Type		Tisch's TSP HVS	Tish HVS Calibrator
Standard Equipment Model No.		TE-5170X	TE-5028
Equipment serial no.	MFC	1049	1050
Last Calibration Date		17-Jun-21	24-Sep-20
Next Calibration Date		17-Aug-21	24-Sep-21

Verification Test No.	Date	Time			K-Factor	Counts/ Minute (R)	Total Counts (TC)	TSP Sample ID No.	Dust Concentration (ug/m3), (C)
		Start-time	End-time	Elapsed Time (in min)	K-Factor (K=C/R)	x-axis			y axis
1	27/6/2021	1254.37	1257.37	180.00	0.00098	34.00	6120	R210872/1	33.33
2	27/6/2021	1258.44	1261.44	180.00	0.00095	62.33	11220	R210872/2	59.26
3	27/6/2021	1262.31	1265.31	180.00	0.00122	8.00	1440	R210872/3	9.72
4	1/7/2021	1265.84	1268.84	180.00	0.00100	73.33	13200	R210887/1	73.15
5	1/7/2021	1269.10	1272.10	180.00	0.00116	12.00	2160	R210887/2	13.89
6	1/7/2021	1272.50	1275.50	180.00	0.00103	23.33	4200	R210887/3	24.07
					0.00106				

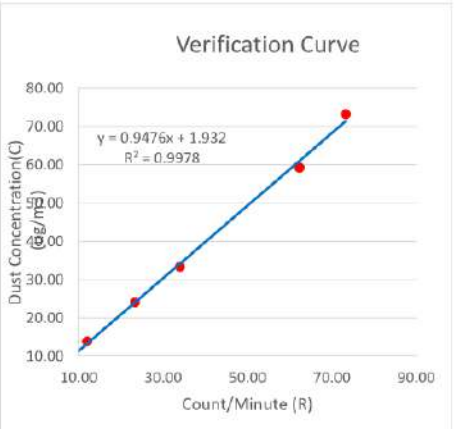
K-Factor to be inputted in LD-5R (corrected 1 decimal point): 1.1

By Linear Regression of y on x:

slope, mh= 0.9476
intercept,ch= 1.9320
*Correlation Coefficient,R= 0.9989

Verification Test Result: Strong Correlation. Results were accepted.

* If the Correlation Coefficient, R is <0.5. Checking and Re-verification are required.



Verified By: _____ Date: 20-07-2021
Technical Manager

TISCH Environmental

RECALIBRATION DUE DATE:
August 3, 2022

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	August 3, 2021	Rootsmeter S/N: 438320	Ta: 295	°K
Operator:	Jim Tisch		Pa: 750.57	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	1.3170	4.1	1.50
2	3	4	1	1.0350	6.7	2.50
3	5	6	1	0.9420	8.0	3.00
4	7	8	1	0.8650	9.3	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)
0.9922	0.7534	1.2233	0.9945	0.7552	0.7678
0.9887	0.9553	1.5793	0.9911	0.9576	0.9913
0.9870	1.0478	1.7300	0.9893	1.0503	1.0859
0.9853	1.1390	1.8686	0.9876	1.1417	1.1729
0.9761	1.4925	2.4466	0.9784	1.4960	1.5356
QSTD	m=	1.64554	QA	m=	1.03041
	b=	-0.00368		b=	-0.00231
	r=	0.99975		r=	0.99975

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:	23-Sep-2021
Serial No:	1084	Model:	TE-5170X	Operator:	Tim

Ambient Condition

Corrected Pressure (mm Hg):	759.8	Temperature (deg K):	301.0

Calibration Orifice

Model:	TE-5028A	Slope:	1.03041
Serial No.:	3702	Intercept:	-0.00231
Calibration Due Date:	3-Aug-22	Corr. Coeff:	0.99975

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	1.21	1.064	39.1	38.90
2	2.53	1.538	40.7	40.49
3	3.33	1.764	41.5	41.29
4	3.74	1.869	41.8	41.59
5	4.41	2.030	42.3	42.08

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

m= 3.3191 b= 35.3825 Corr. Coeff= 0.9997

Sampler set point(SSP) 40 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: 23-Sep-21

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HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	YMT Catholic Primary School	Site ID:	W-A1	Date:	11-Oct-2021
Serial No:	1084	Model:	TE-5170X	Operator:	Tim

Ambient Condition

Corrected Pressure (mm Hg):	754.1	Temperature (deg K):	301.5

Calibration Orifice

Model:	TE-5028A	Slope:	1.03041
Serial No.:	3702	Intercept:	-0.00231
Calibration Due Date:	3-Aug-22	Corr. Coeff:	0.99975

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	1.28	1.090	39.9	39.51
2	2.41	1.494	40.9	40.50
3	3.34	1.759	41.5	41.10
4	3.85	1.888	41.8	41.40
5	4.18	1.967	42.0	41.59

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

m= 2.3553 b= 36.9590 Corr. Coeff= 0.9998

Sampler set point(SSP) 40 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: 11-Oct-21

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HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	YMT Catholic Primary School	Site ID:	W-A1	Date:	26-Oct-2021
Serial No:	1084	Model:	TE-5170X	Operator:	Tim

Ambient Condition

Corrected Pressure (mm Hg):	762.0	Temperature (deg K):	298.1

Calibration Orifice

Model:	TE-5028A	Slope:	1.03041
Serial No.:	3702	Intercept:	-0.00231
Calibration Due Date:	3-Aug-22	Corr. Coeff:	0.99975

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	1.38	1.144	38.5	38.54
2	2.35	1.492	40.0	40.05
3	3.57	1.838	41.3	41.35
4	3.88	1.916	41.7	41.75
5	4.32	2.022	42.2	42.25

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

m= 4.1439 b= 33.8158 Corr. Coeff= 0.9993

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: 26-Oct-21

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HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Man Cheong Building	Site ID:	W-A6	Date:	23-Sep-2021
Serial No:	1050	Model:	TE-5170X	Operator:	Tim

Ambient Condition

Corrected Pressure (mm Hg):	759.8	Temperature (deg K):	301.0

Calibration Orifice

Model:	TE-5028A	Slope:	1.03041
Serial No.:	3702	Intercept:	-0.00231
Calibration Due Date:	3-Aug-22	Corr. Coeff:	0.99975

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	1.13	1.029	38.4	38.20
2	2.15	1.418	39.3	39.10
3	2.64	1.571	39.7	39.50
4	3.18	1.724	40.1	39.89
5	4.31	2.007	40.8	40.59

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

m= 2.4516 b= 35.6576 Corr. Coeff= 0.9996

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: 23-Sep-21

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HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Man Cheong Building	Site ID:	W-A6	Date:	11-Oct-2021
Serial No:	1050	Model:	TE-5170X	Operator:	Tim

Ambient Condition

Corrected Pressure (mm Hg):	754.1	Temperature (deg K):	301.5

Calibration Orifice

Model:	TE-5028A	Slope:	1.03041
Serial No.:	3702	Intercept:	-0.00231
Calibration Due Date:	3-Aug-22	Corr. Coeff:	0.99975

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	1.03	0.978	40.0	39.61
2	1.85	1.309	40.5	40.11
3	2.56	1.540	40.9	40.50
4	3.17	1.713	41.1	40.70
5	4.38	2.014	41.6	41.20

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

m= 1.5231 b= 38.1233 Corr. Coeff= 0.9992

Sampler set point(SSP) 40 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: 11-Oct-21

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:	26-Oct-2021
Serial No:	1050	Model:	TE-5170X	Operator:	Tim

Ambient Condition

Corrected Pressure (mm Hg):	762.0	Temperature (deg K):	298.1

Calibration Orifice

Model:	TE-5028A	Slope:	1.03041
Serial No.:	3702	Intercept:	-0.00231
Calibration Due Date:	3-Aug-22	Corr. Coeff:	0.99975

Calibration Data

Plate or Test #	In,H2O (in)	Qa, X-Axis (m3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	1.25	1.089	39.1	39.14
2	2.31	1.479	39.9	39.95
3	2.51	1.542	40.0	40.05
4	3.34	1.778	40.4	40.45
5	4.12	1.974	40.8	40.85

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

m= 1.8980 b= 37.1018 Corr. Coeff= 0.9990

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: 26-Oct-21

Appendix I
Calibration Certificates (Noise)

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

Certificate of Calibration

for

Description:	*Sound Level Meter*
Manufacturer:	*NTi Audio*
Type No.:	*XL2 (Serial No.: A2A-13548-E0)*
Microphone:	*ACO 7052 (Serial No.:73780)*
Preamplifier:	*NTi Audio M2211 MA220 (Serial No.:5235)*

Submitted by:

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

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: 10 December 2020

Date of calibration: 12 December 2020

Calibrated by: _____
Calibration Technician

Certified by: _____
Mr. Ng Yan Wa
Laboratory Manager

Date of issue: 12 December 2020

Certificate No.: APJ20-144-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:	23.7°C
Air Pressure:	1006 hPa
Relative Humidity:	61.8%

3. *Calibration Equipment:*

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV200041	HOKLAS

4. *Calibration Results*

Sound Pressure Level

Reference Sound Pressure Level

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

Linearity

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

Time Weighting

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

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Homepage: http://www.aa-lab.com E-mail : inquiry@aa-lab.com

Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dB SPL	Fast	94	31.5	94.1	±2.0
				63	94.1	±1.5
				125	94.1	±1.5
				250	94.1	±1.4
				500	94.1	±1.4
				1000	94.0	Ref
				2000	93.8	±1.6
				4000	93.4	±1.6
				8000	92.7	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	31.5	54.7	-39.4±2.0
				63	68.0	-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	91.6	-1.1+2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBC SPL	Fast	94	31.5	91.1	-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	93.7	-0.2±1.6
				4000	92.6	-0.8±1.6
				8000	89.7	-3.0 +2.1; -3.1

Room 422,Leader Industrial Centre,57-59 Au Pui Wan Street ,Fo Tan, Shatin,N.T.,Hong Kong
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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	± 0.15
	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.

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

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-13661-E0)*
Microphone:	*ACO 7052 (Serial No.: 73912)*
Preamplifier:	*NTi Audio MA220 (M2211) (Serial No.:5735)*

Submitted by:

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

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

☑ **Within (31.5 Hz – 8k Hz)**
☐ **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: 17 September 2021

Date of calibration: 23 September 2021

Calibrated by: _____
Calibration Technician

Certified by: _____
Mr. Ng Yan Wa
Laboratory Manager

Date of issue: **23 September 2021**

Certificate No.: APJ21-086-CC001

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

(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:	24.0 °C
Air Pressure:	1001 hPa
Relative Humidity:	55.7 %

3. *Calibration Equipment:*

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV200041	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

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Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dB SPL	Fast	94	31.5	94.1	±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	94.3	±1.6
				4000	95.1	±1.6
				8000	94.3	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	31.5	54.7	-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	95.5	+1.2 ±1.6
				4000	96.1	+1.0 ±1.6
				8000	93.9	-1.1+2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBC SPL	Fast	94	31.5	91.1	-3.0 ±2.0
				63	93.3	-0.8 ±1.5
				125	93.9	-0.2 ±1.5
				250	94.0	-0.0 ±1.4
				500	94.0	-0.0 ±1.4
				1000	94.0	Ref
				2000	94.2	-0.2 ±1.6
				4000	94.3	-0.8 ±1.6
				8000	91.3	−3.0 +2.1; −3.1

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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.

Room 422, Leader Industrial Centre, 57-59 Au Pui Wan Street, Fo Tan, Shatin, N.T., Hong Kong
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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-17638-E0)*
Microphone:	*ACO 7052 (Serial No.:68746)*
Preamplifier:	*NTi Audio M2211 MA220 (Serial No.:7014)*

Submitted by:

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

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: 22 March 2021

Date of calibration: 24 March 2021

Calibrated by: _____ *Calibration Technician*

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

Date of issue: 24 March 2021

Certificate No.: APJ20-185-CC001

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

(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:	23.2 °C
Air Pressure:	1006 hPa
Relative Humidity:	57.6 %

3. *Calibration Equipment:*

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV200041	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	94.1	±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	94.1	Ref
			104		104.1	±0.3
			114		114.1	±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	94.1	Ref
		Slow			94.1	±0.3

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Tel: (852) 2668 3423 Fax:(852) 2668 6946
Homepage: http://www.aa-lab.com E-mail : inquiry@aa-lab.com

Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dB SPL	Fast	94	31.5	94.1	±2.0
				63	94.2	±1.5
				125	94.2	±1.5
				250	94.1	±1.4
				500	94.2	±1.4
				1000	94.1	Ref
				2000	94.3	±1.6
				4000	94.6	±1.6
				8000	92.8	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	31.5	54.7	-39.4 ±2.0
				63	68.0	-26.2 ±1.5
				125	78.1	-16.1 ±1.5
				250	85.5	-8.6 ±1.4
				500	91.0	-3.2 ±1.4
				1000	94.1	Ref
				2000	95.5	+1.2 ±1.6
				4000	95.6	+1.0 ±1.6
				8000	91.8	-1.1+2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBC SPL	Fast	94	31.5	91.1	-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	94.2	-0.0 ±1.4
				1000	94.1	Ref
				2000	94.1	-0.2 ±1.6
				4000	93.8	-0.8 ±1.6
				8000	89.8	–3.0 +2.1: –3.1

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Tel: (852) 2668 3423 Fax:(852) 2668 6946
Homepage: http://www.aa-lab.com E-mail : inquiry@aa-lab.com

5. *Calibration Results Applied*

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

Uncertainties of Applied Value:

94 dB	31.5 Hz	± 0.10
	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.

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	20-Mar-2021	**Certificate Number**	MLCN2105698

Customer Information

Company Name	Acuity Sustainability Consulting Limited
Address	Unit C, 11/F., Ford Glory Plaza, Nos. 37-39 Wing Hing Street, Cheung Sha Wan, Kowloon, HK

Equipment-under-Test (EUT)

Description	Sound Calibrator
Manufacturer	Svantek
Model Number	SV 33B
Serial Number	83042
Equipment Number	--

Calibration Particular

Date of Calibration	20-Mar-2021		
Calibration Equipment	47[illegible](MLTE008) / AV200063 / 23-Jun-2[illegible] 13[illegible]7(MLTE190) / MLEC20/05/02 / 26-May-2[illegible]		
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 20-Mar-2021

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.

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 號保盛工業大廈 9 樓 B 室
Unit B, 9/F., Boldwin Industrial Bldg., 16-18 Wan Sing Street, Kwai Chung, N.T., Hong Kong. Tel: (852) 2116 1380. Fax: (852) 2264 6480. Email: info@maxlab.com.hk

MAXLAB

Certificate No. MLCN210569S

Calibration Data

EUT Setting	Standard Reading	EUT Error	Calibration Uncertainty	EUT Specification
114 dB	114.0 dB	0.0 dB	0.15 dB	± 0.3 dB

- END -

Calibrated By : Dan
Date : 20-Mar-21

Checked : K.O. Lo
Date : 20-Mar-21

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 號保富工業大廈 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 5460 Email: info@maxlab.com.hk

SCARLET | TECH

Calibration & Test Certificate

To whom it may concern

We hereby certify that the instrument under mentioned has been certainly calibrated according to our calibration standard and the testing result in the calibration procedure has been good enough within the tolerance regulated in our specification.

Test conditions

Model name ..... Class 1 Sound Level Calibrator
Model number..... ST-120
Serial number 200504747
Temperature ..... 25° C
Humidity..... 43 %*rh*
Date of calibration 2020/12/31

Test data

Item	Description	Results
94 dB	Range: 94 dB	PASS
114 dB	Range: 114 dB	PASS

Calibrator

Model	Model number	Serial number	Due date
Standard SOUND LEVEL METER	B&K 2239	181001638	JAN/30/2022

The standard generators used for calibration procedure are proofed once a year and can be traceable to the standard authorized by public organization.

SCARLET TECH CO., LTD. SCARLET | TECH 思碩科技有限公司

Approved by

Ethan Lin, Head of Engineering Department

MAXLAB

CALIBRATION CERTIFICATE

Certificate Information

Date of Issue	17-Nov-2020	**Certificate Number**	MLCN2030815

Customer Information

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

Equipment-under-Test (EUT)

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

Calibration Particular

Date of Calibration	17-Nov-2020		
Calibration Equipment	4231(MLTE008) / AV200063 / 23-Jun-23 1357(MLTE190) / MLEC20/05/02 / 26-May-21		
Calibration Procedure	MLCG00, MLCG15		
Calibration Conditions	Laboratory	Temperature	23 °C ± 5 °C
		Relative Humidity	55% ± 25%
	EUT	Stabilizing Time	Over 3 hours
		Warm-up Time	Not applicable
		Power Supply	Internal battery
Calibration Results	Calibration data were detailed in the continuation pages. Calibration result was within EUT specification.		

Approved By & Date

K.O. Lo 17-Nov-2020

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.

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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) 2284 6460 Email: info@maxlab.com.hk

MAXLAB

Certificate No. MLCN2030815

Calibration Data

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

- END -

Calibrated By : Dan
Date : 17-Nov-20

Checked By : K.O. Lo
Date : 17-Nov-20

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

MAXLAB

CALIBRATION CERTIFICATE

Certificate Information			
Date of Issue	7-Aug-2021	**Certificate Number**	MLCN212053S

Customer Information	
Company Name	Acuity Sustainability Consulting Limited
Address	Unit C, 11/F., Ford Glory Plaza, Nos. 37-39 Wing Hing Street, Cheung Sha Wan, Kowloon, HK

Equipment-under-Test (EUT)	
Description	Acoustic Calibrator
Manufacturer	Pulsar
Model Number	105
Serial Number	63705
Equipment Number	--

Calibration Particular			
Date of Calibration	7-Aug-2021		
Calibration Equipment	4231(MLTE008) / AV200063 / 23-Jun-23 1357(MLTE190) / MLEC21/05/02 / 26-May-22		
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	7-Aug-2021

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.
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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 6180 Email: info@maxlab.com.hk

MAXLAB

Certificate No. MLCN2120535

Calibration Data

EUT Setting	Standard Reading	EUT Error from Setting	Calibration Uncertainty	EUT Specification
94 dB	93.9 dB	-0.1 dB	0.20 dB	± 0.2 dB

- END -

Calibrated By : Keneth
Date : 7-Aug-21

Checked By : K.O. Lo
Date : 7-Aug-21

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) 2176 1380 Fax: (852) 2264 6480 Email: info@maxlab.com.hk

Appendix J
The Certification of Laboratory with HOKLAS Accredited Analytical Tests

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

ALS TECHNICHEM (HK) PTY LIMITED

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

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

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

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

Environmental Testing
環境測試

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

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

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

Registration Number : HOKLAS 066
註冊號碼：

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

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

L 000552

Hong Kong Accreditation Service
香港認可處

Certificate of Accreditation
認可證書

This is to certify that
特此證明

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

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

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

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

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

Environmental Testing

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

環境測試

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

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

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

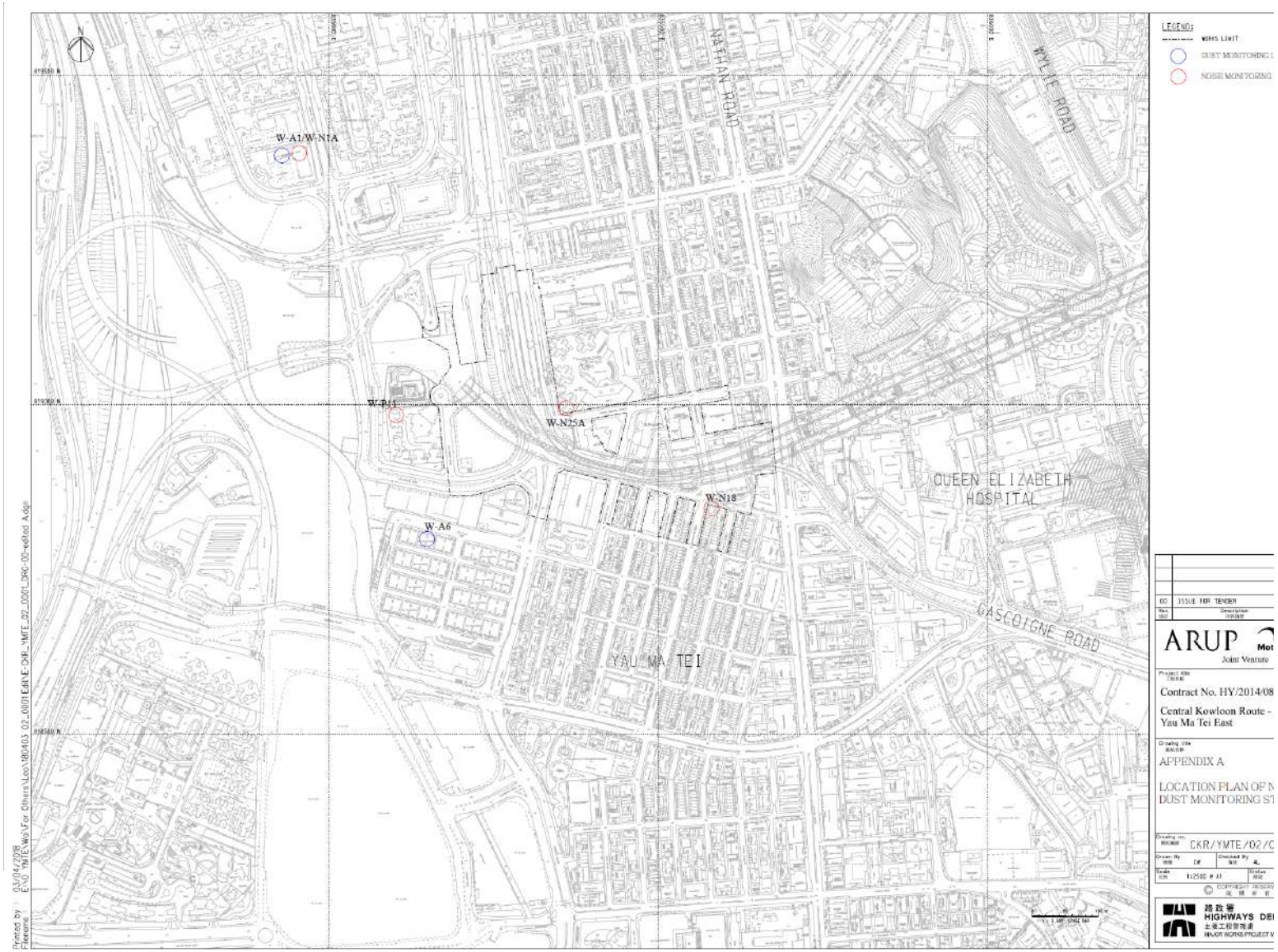
Registration Number : HOKLAS 241
註冊號碼：

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

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

L 001195

Appendix K
Location Plan of Noise and Air Quality Monitoring Station


LEGENDS:
NATHAN ROAD
WYLIE ROAD
W-A1/W-N1A
W-A1
W-N25A
W-N18
W-A6
QUEEN ELIZABETH HOSPITAL
CASCOIGNE ROAD
YAU MA TEI
ISSUE FOR TENDER
ARUP
Joint Venture
Contract No. HY/2014/08
Central Kowloon Route -
Yau Ma Tei East
APPENDIX A
LOCATION PLAN OF
DUST MONITORING S
CKR/YMTE/02/C
1:2500 @ A1
HIGHWAYS DE

Appendix L
Monitoring Data (Air Monitoring)

Location: Yau Ma Tei Catholic Primary School (Hoi Wang Road) (W-A1)
Monitoring date: 4, 11, 15, 21 and 27 October 2021
Parameter : TSP 1-hour
Other Factors Nearby traffic

Date	**1-hour TSP (μg/m³)**				
	Weather	**Start Time**	**1st Hour (μg/m³)**	**2nd Hour (μg/m³)**	**3rd Hour (μg/m³)**
04/10/2021	Sunny	13:05	58	62	56
09/10/2021	Rescheduled to 11/10/2021 due to adverse weather				
11/10/2021	Fine	9:03	60	65	61
15/10/2021	Sunny	9:02	67	64	61
21/10/2021	Fine	9:27	62	64	59
27/10/2021	Sunny	9:03	67	63	55
Minimum: 55 μg/m³			Maximum: 67μg/m³		

Location: Man Cheong Building (W-A6)
Monitoring date: 4, 11, 15, 21 and 27 October 2021
Parameter : TSP 1-hour
Other Factors Nearby traffic

Date	1-hour TSP (μg/m³)				
	Weather	**Start Time**	**1st Hour (μg/m³)**	**2nd Hour (μg/m³)**	**3rd Hour (μg/m³)**
04/10/2021	Sunny	12:33	64	69	73
09/10/2021	Rescheduled to 11/10/2021 due to adverse weather				
11/10/2021	Fine	9:23	62	65	60
15/10/2021	Sunny	9:46	67	62	74
21/10/2021	Fine	10:11	62	67	65
27/10/2021	Sunny	12:24	67	63	61
Minimum: 60 μg/m³			Maximum: 74 μg/m³		

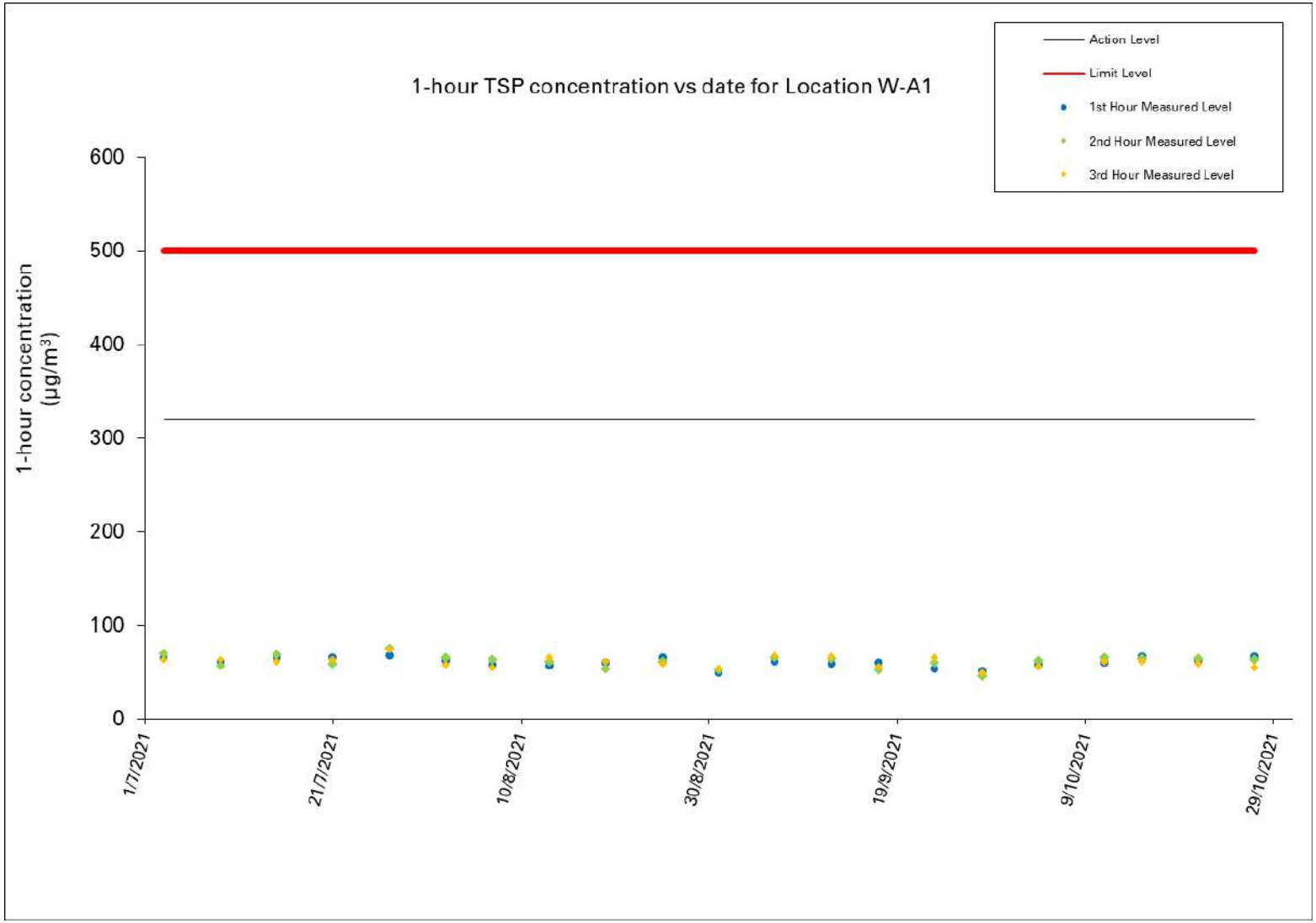


Figure 1: Graphical Illustration of Measured 1-hour TSP (µg/m^3) Levels at W-A1

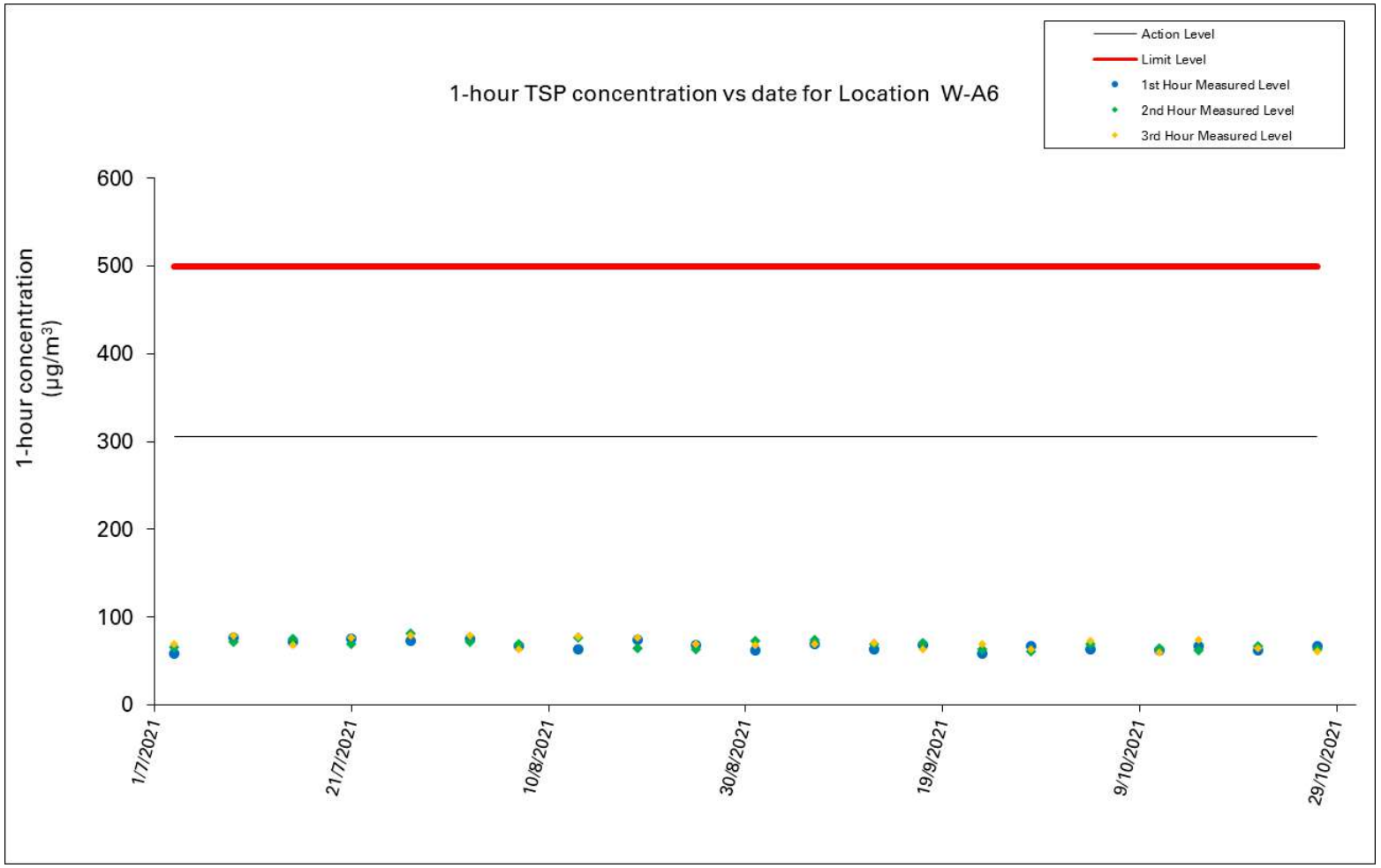


Figure 2: Graphical Illustration of Measured 1-hour TSP (µg/m^3) Levels at W-A6

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

Monitoring date: 4, 11, 15, 21 and 27 October 2021

Parameter : TSP 24-hour

Other Factors Nearby traffic

Date of Calibration:	23-Sep-21	Slope =	3.3191
Calibration due date:	8-Oct-21	Intercept =	35.3825
Date of Calibration:	11-Oct-21	Slope =	2.3553
Calibration due date:	26-Oct-21	Intercept =	36.9590
Date of Calibration:	26-Oct-21	Slope =	4.1439
Calibration due date:	10-Nov-21	Intercept =	33.8158

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)	($\mu g/m^3$)
4/10/2021	Sunny	5733.4	5757.4	1440.0	40	40	40.0	29.8	1012.5	1.29	1852	2.7740	2.8670	0.0930	50
9/10/2021	Rescheduled to 11/10/2021 due to adverse weather														
11/10/2021	Fine	5757.7	5781.7	1440.0	39	39	39.0	28.5	1005.4	0.64	925	2.7551	2.8238	0.0687	74
15/10/2021	Sunny	5781.7	5805.7	1440.0	39	39	39.0	26.2	1009.2	0.77	1105	2.7674	2.8138	0.0464	42
21/10/2021	Fine	5805.7	5829.7	1440.0	39	40	39.5	24.2	1014.9	1.13	1625	2.7919	2.8290	0.0371	23
27/10/2021	Sunny	5829.9	5853.9	1440.0	39	41	40.0	25.6	1016.7	1.52	2182	2.7976	2.8849	0.0873	40
										Maximum:	74 $\mu g/m^3$		Minimum:	23 $\mu g/m^3$	

Location: Man Cheong Building (W-A6)
Monitoring date: 4, 11, 15, 21 and 27 October 2021
Parameter : TSP 24-hour
Other Factors Nearby traffic

Date of Calibration:	23-Sep-21	Slope =	2.4516
Calibration due date:	8-Oct-21	Intercept =	35.6576
Date of Calibration:	11-Oct-21	Slope =	1.5231
Calibration due date:	26-Oct-21	Intercept =	38.1233
Date of Calibration:	26-Oct-21	Slope =	1.8980
Calibration due date:	10-Nov-21	Intercept =	37.1018

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)	($\mu g/m^3$)
4/10/2021	Sunny	5322.6	5346.6	1440.00	39	40	39.5	29.8	1012.5	1.43	2055	2.7652	2.8940	0.1288	63
9/10/2021	Rescheduled to 11/10/2021 due to adverse weather														
11/10/2021	Fine	5346.9	5370.9	1440.00	40	40	40.0	28.5	1005.4	0.88	1263	2.7650	2.8611	0.0961	76
15/10/2021	Sunny	5370.9	5394.9	1440.00	40	41	40.5	26.2	1009.2	1.40	2017	2.7711	2.8292	0.0581	29
21/10/2021	Fine	5394.9	5418.9	1440.00	39	40	39.5	24.2	1014.9	0.98	1413	2.7931	2.851	0.0579	41
27/10/2021	Sunny	5419.1	5443.1	1440.00	38	39	38.5	25.6	1016.7	0.79	1131	2.7814	2.8871	0.1057	93
										Maximum:	93 $\mu g/m^3$		Minimum:	29 $\mu g/m^3$	

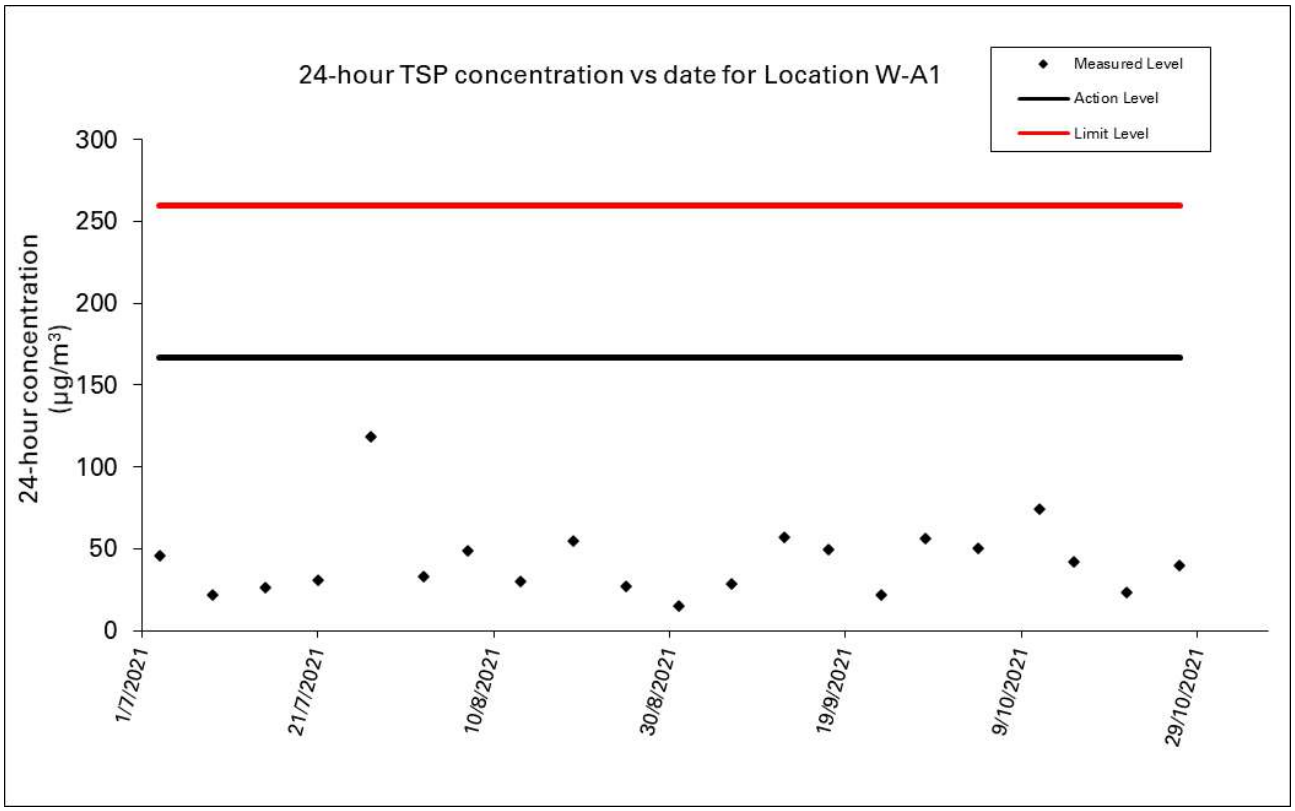


Figure 3: Graphical Illustration of Measured 24-hour TSP (µg/m^3) Levels at W-A1

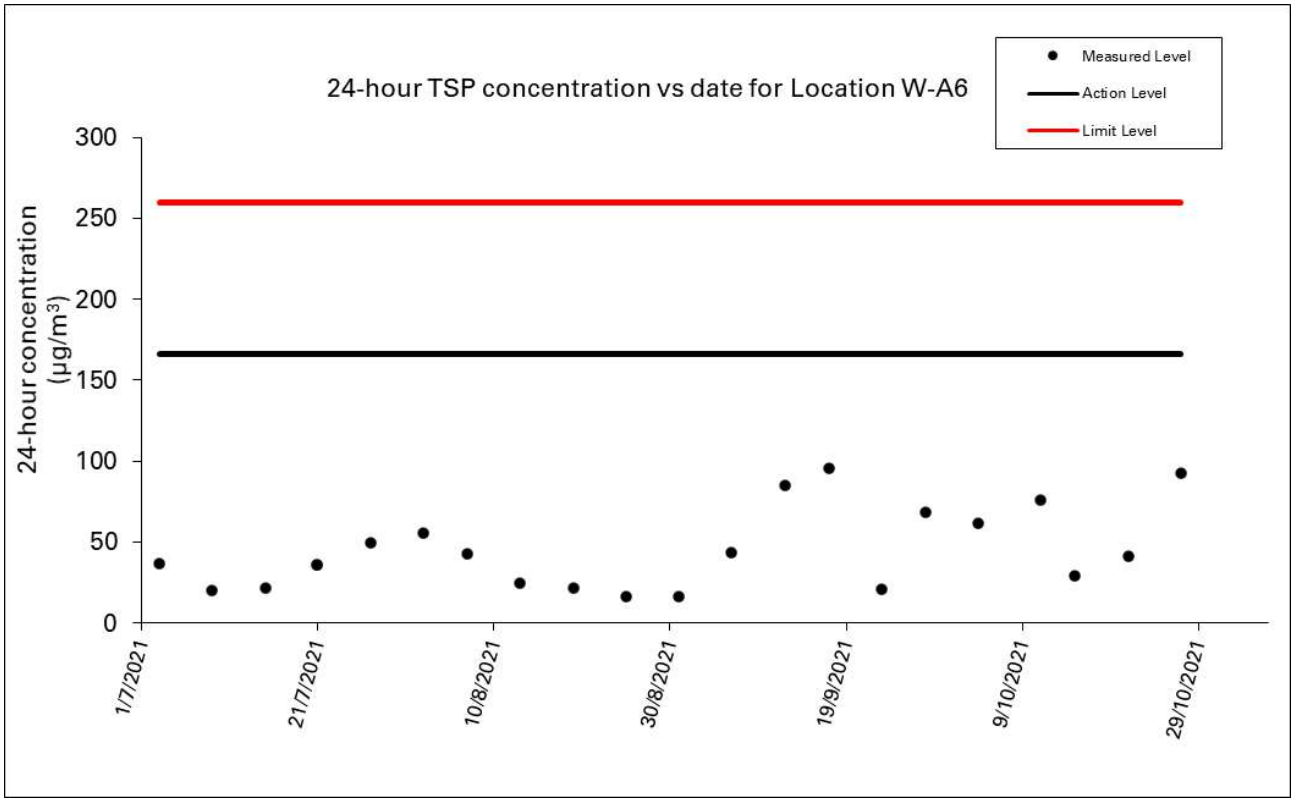
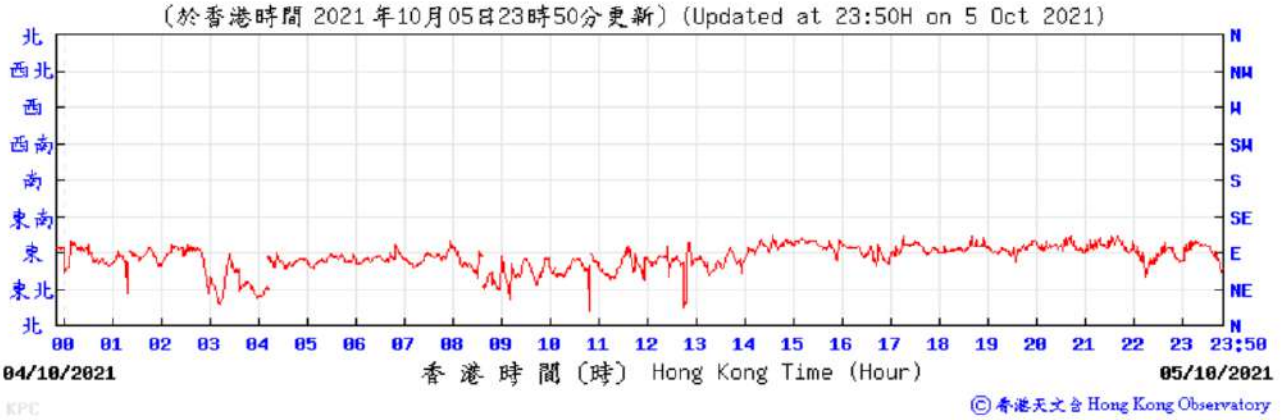
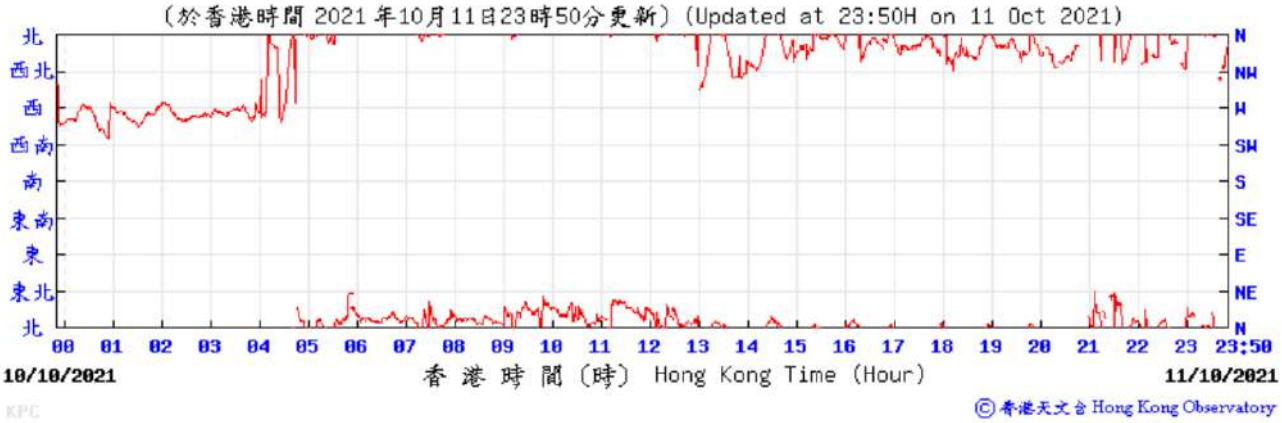
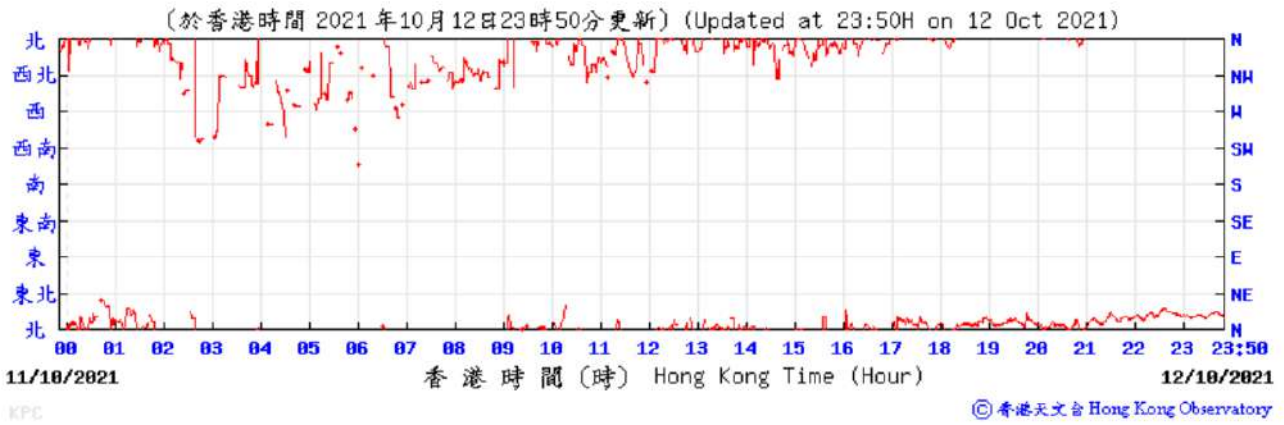


Figure 4: Graphical Illustration of Measured 24-hour TSP (µg/m^3) Levels at W-A6

Wind direction data for 4, 5, 11, 12, 15, 16, 21, 22, 27 and 28 October 2021



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北 西北 西 西南 南 東南 東 東北 北
N NW W SW S SE E NE N
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23:50
11/10/2021
香 港 時 間 (時) Hong Kong Time (Hour)
12/10/2021
© 香港天文台 Hong Kong Observatory


(於香港時間 2021 年10月15日23時50分更新) (Updated at 23:50H on 15 Oct 2021)
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00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23:50
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香 港 時 間 (時) Hong Kong Time (Hour)
15/10/2021
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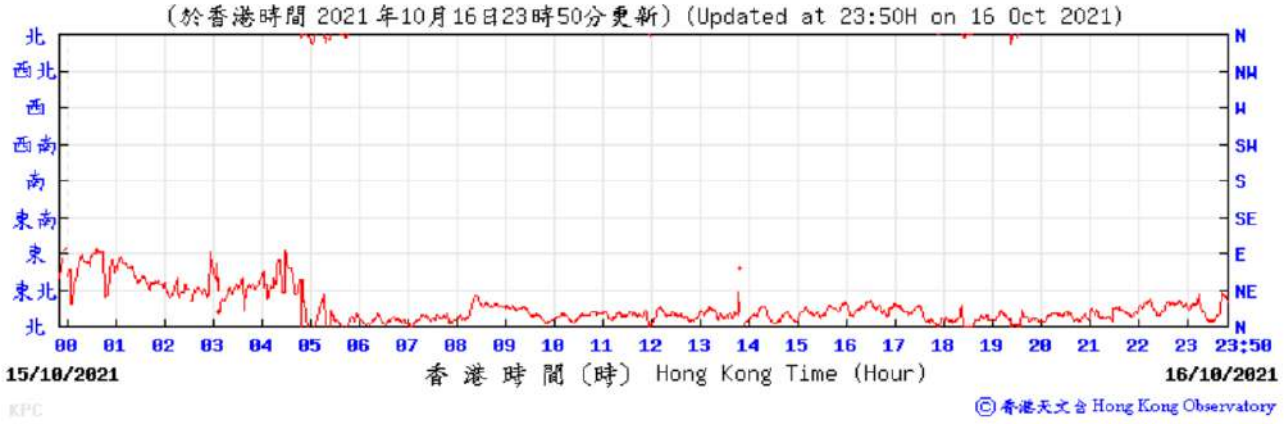
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00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23:50
15/10/2021
香 港 時 間 (時) Hong Kong Time (Hour)
16/10/2021
© 香港天文台 Hong Kong Observatory


(於香港時間 2021 年10月21日23時50分更新) (Updated at 23:50H on 21 Oct 2021)
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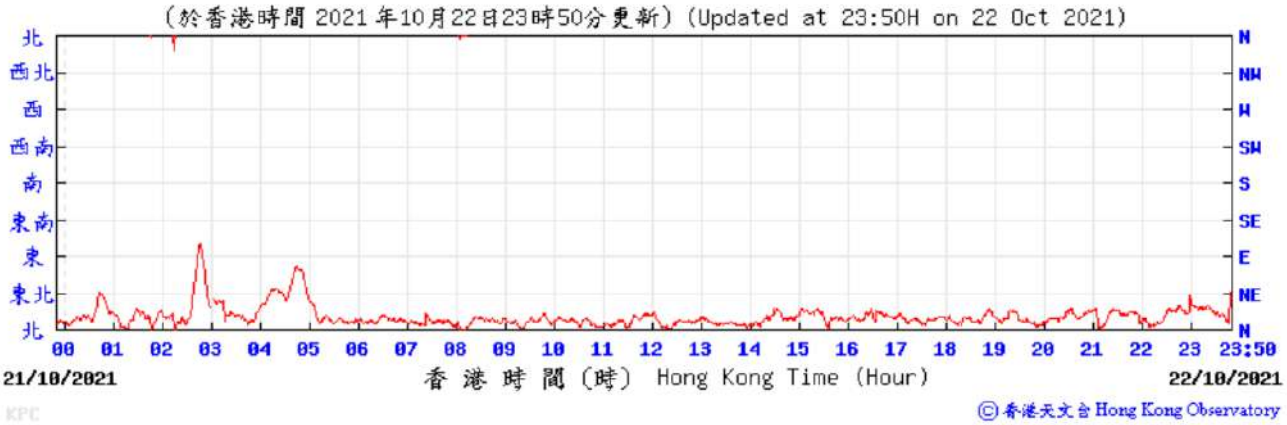
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21/10/2021
香 港 時 間 (時) Hong Kong Time (Hour)
22/10/2021
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(於香港時間 2021 年10月27日23時50分更新) (Updated at 23:50H on 27 Oct 2021)
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26/10/2021
香 港 時 間 (時) Hong Kong Time (Hour)
27/10/2021
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(於香港時間 2021 年10月28日23時50分更新) (Updated at 23:50H on 28 Oct 2021)
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00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23:50
27/10/2021
香 港 時 間 (時) Hong Kong Time (Hour)
28/10/2021
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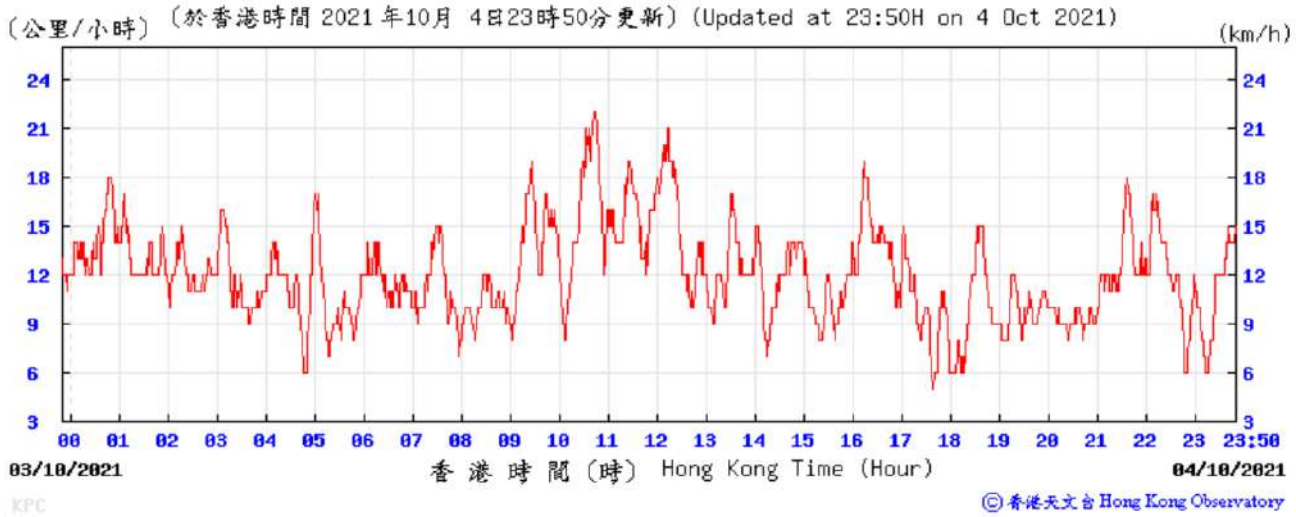
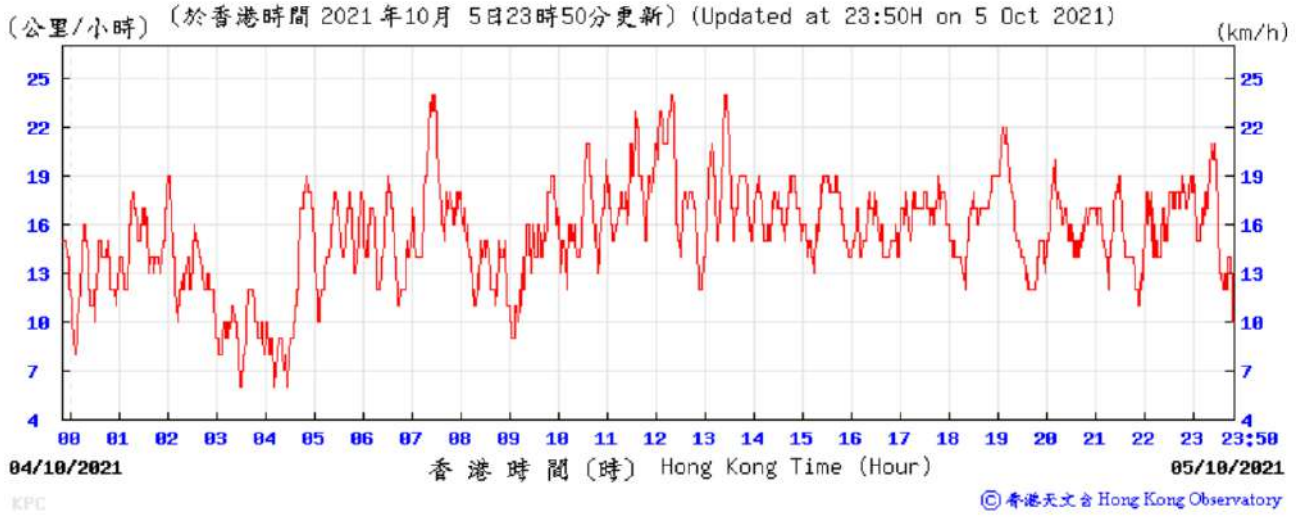
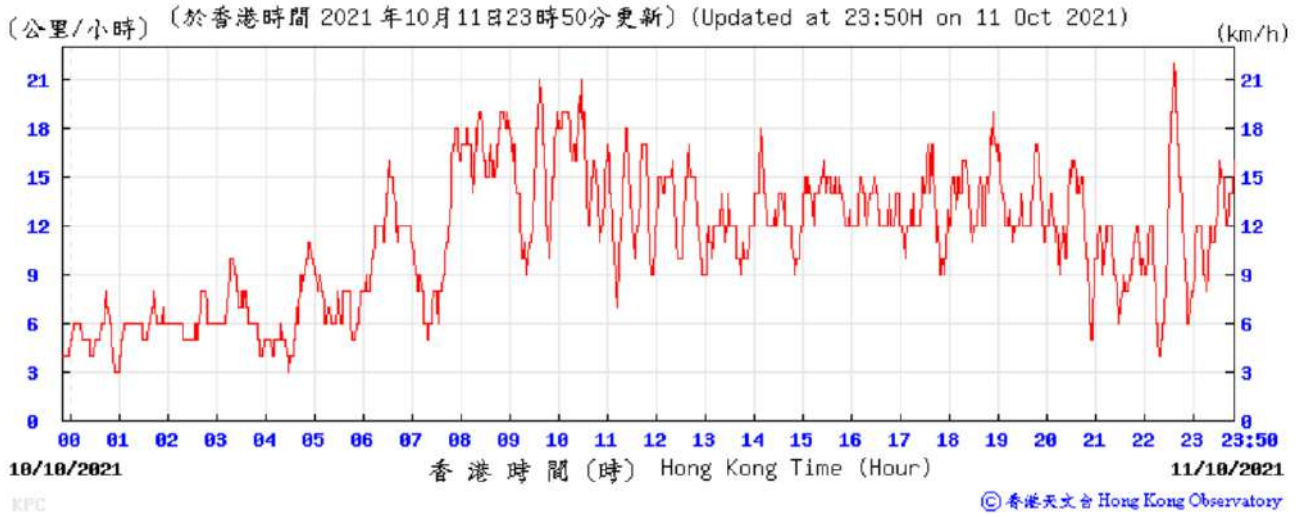
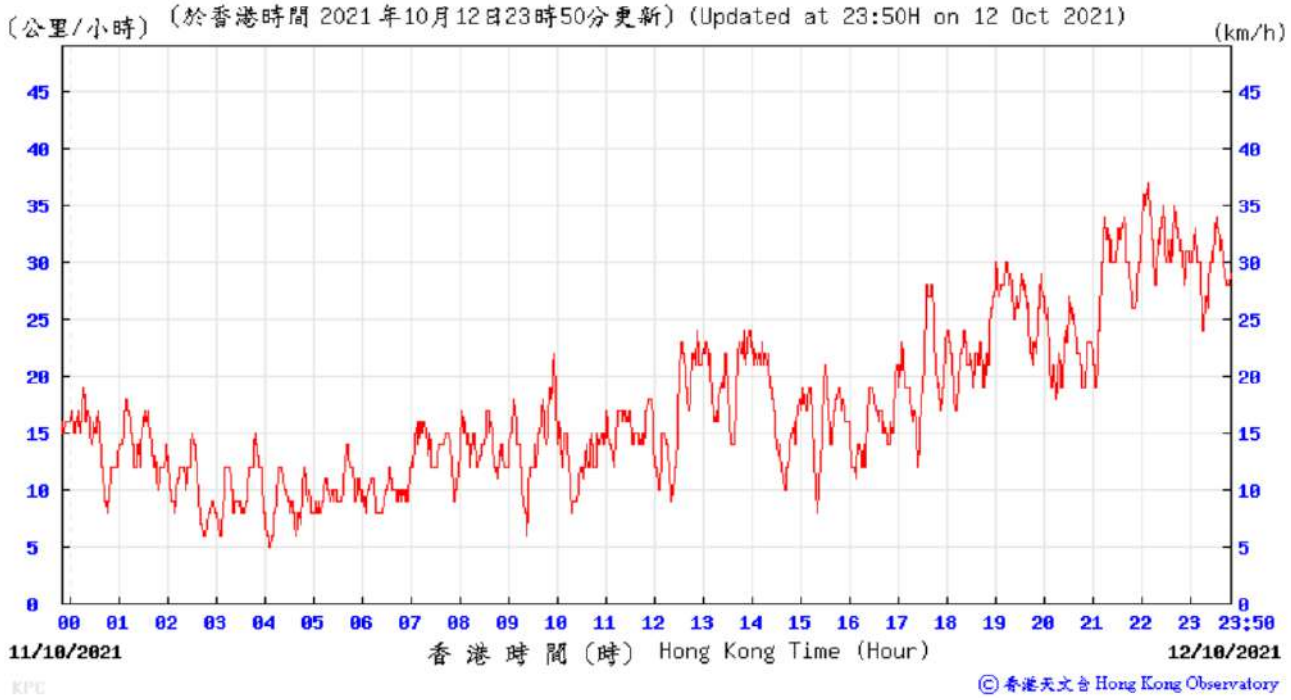
Wind speed data for 4, 5, 11, 12, 15, 16, 21, 22, 27 and 28 October 2021





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(km/h)
11/10/2021
香 港 時 間 (時) Hong Kong Time (Hour)
12/10/2021
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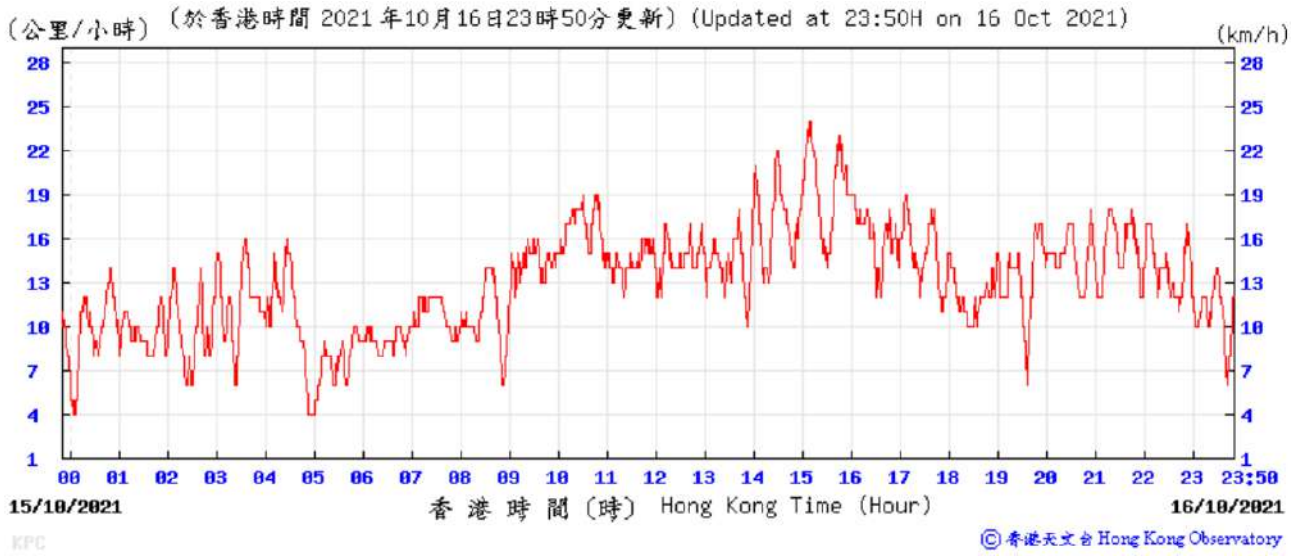
14/10/2021
香 港 時 間 (時) Hong Kong Time (Hour)
15/10/2021
© 香港天文台 Hong Kong Observatory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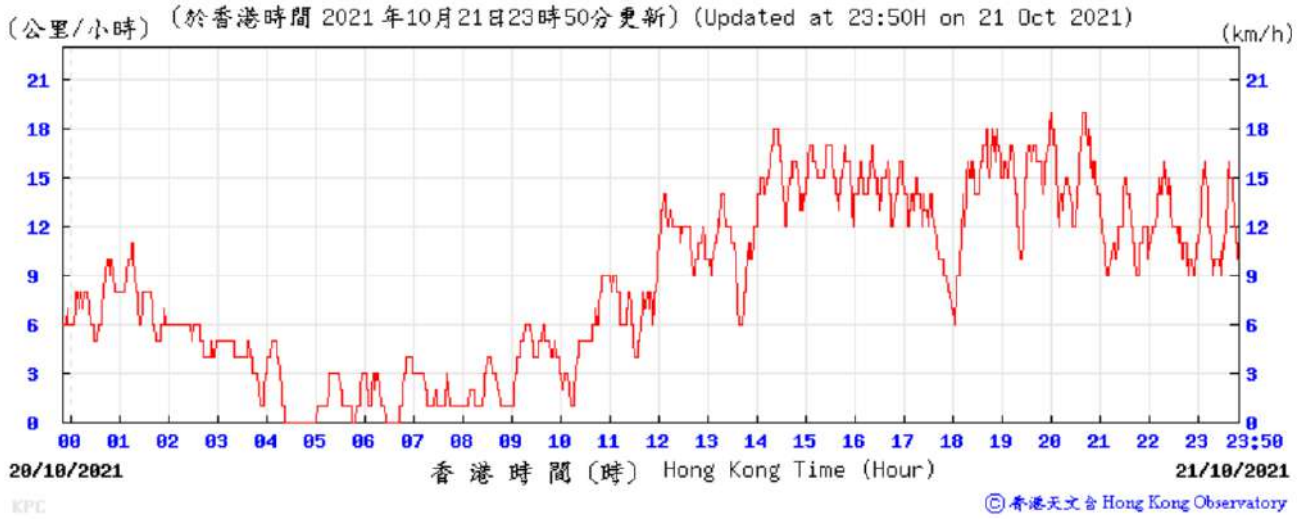
16/10/2021
© 香港天文台 Hong Kong Observatory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18
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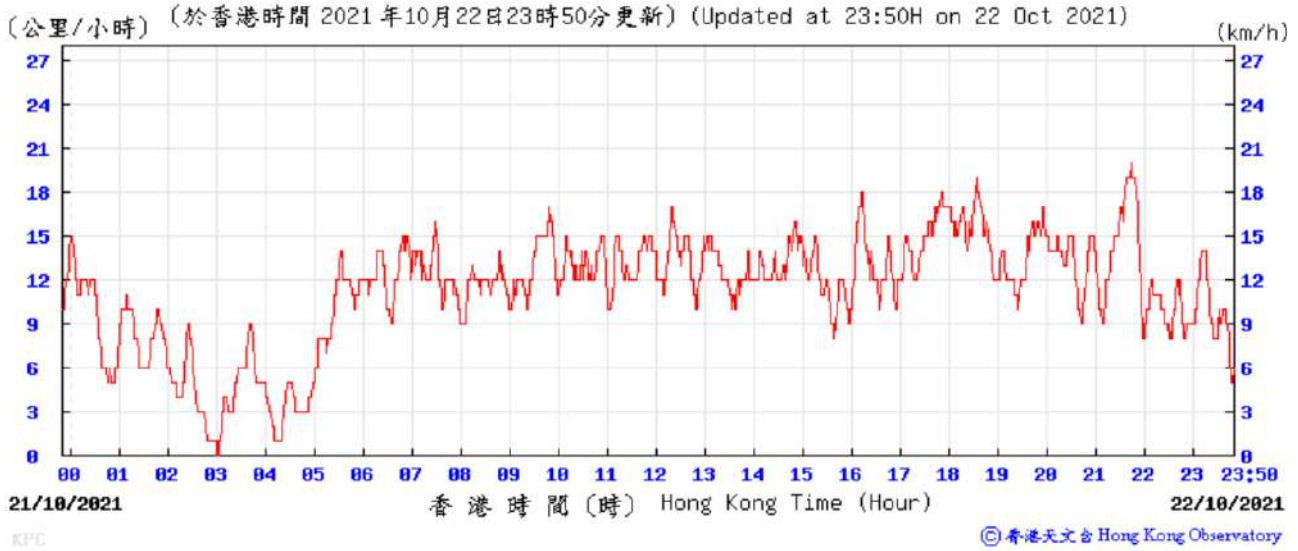
12
9
6
3
0
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23:50
20/10/2021
香 港 時 間 (時) Hong Kong Time (Hour)
21/10/2021
© 香港天文台 Hong Kong Observatory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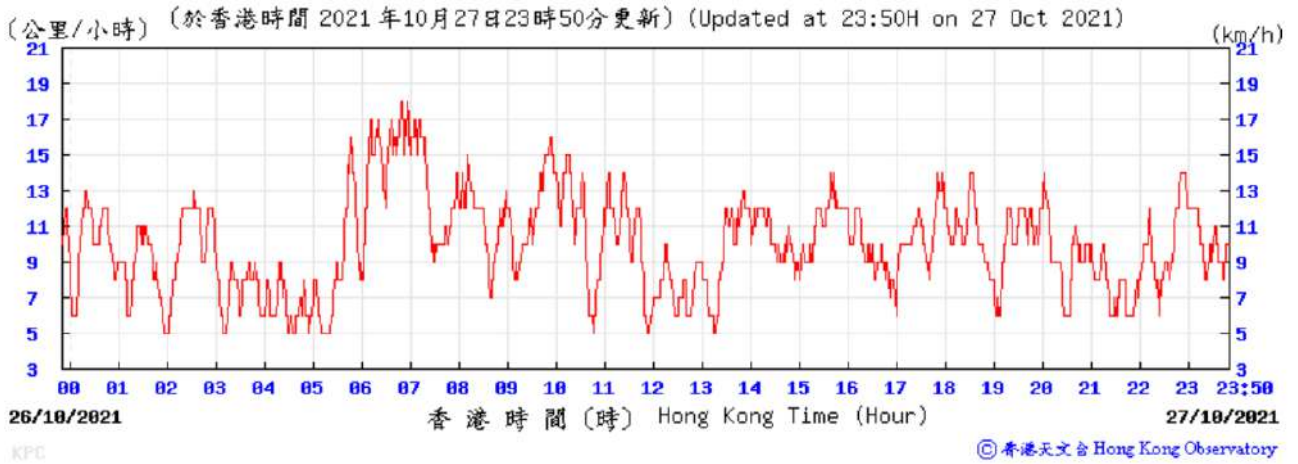
22/10/2021
© 香港天文台 Hong Kong Observatory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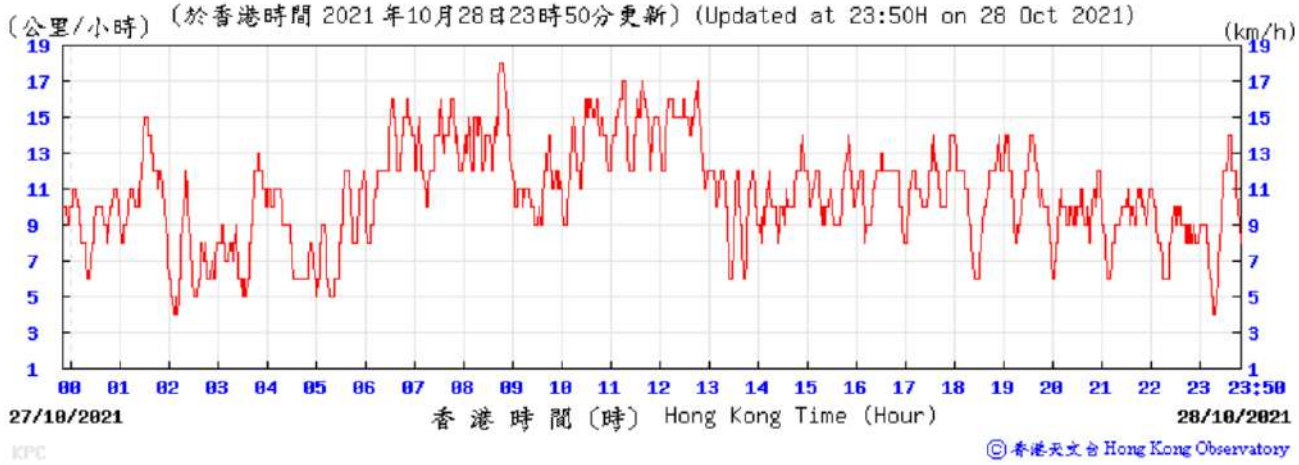
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23:50
26/10/2021
香 港 時 間 (時) Hong Kong Time (Hour)
27/10/2021
© 香港天文台 Hong Kong Observatory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00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23:50
27/10/2021
香 港 時 間 (時) Hong Kong Time (Hour)
28/10/2021
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Appendix M
Monitoring Data (Noise)

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

Monitoring date: 4, 11, 15, 21 and 27 October 2021

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)
04/10/2021	Sunny	13:07 - 13:37	61.1	62.2	59.1	3.3
09/10/2021	Rescheduled to 11/10/2021 due to adverse weather					
11/10/2021	Fine	10:02 - 10:32	60.6	63.9	57.8	4.9
15/10/2021	Sunny	11:04 - 11:34	60.7	62.9	59.5	3.1
21/10/2021	Fine	12:12 - 12:42	61.1	62.9	59.5	3.3
27/10/2021	Sunny	12:26 - 12:56	61.1	62.5	58.8	2.5

Remark: No examination was at W-N1A in the reporting month so limit levels for all monitoring days were 70 dB(A).

Location: Hydan Place (W-N18)

Monitoring date: 4, 11, 15, 21 and 27 October 2021

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)
04/10/2021	Sunny	13:48	-	14:18	71.1	73.8	69.3	4.2
09/10/2021	Rescheduled to 11/10/2021 due to adverse weather							
11/10/2021	Fine	10:53	-	11:23	71.9	75.1	69.9	2.5
15/10/2021	Sunny	11:51	-	12:21	70.8	74.4	69.3	3.3
21/10/2021	Fine	14:58	-	15:28	71.2	74.6	69.2	4.4
27/10/2021	Sunny	9:47	-	10:17	71.1	75.0	69.3	4.2

Location: Prosperous Garden Block 1 (W-N25A)

Monitoring date: 4, 11, 15, 21 and 27 October 2021

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)
04/10/2021	Sunny	14:30	-	15:00	71.3	73.5	69.4	3.9
09/10/2021	Rescheduled to 11/10/2021 due to adverse weather							
11/10/2021	Fine	13:09	-	13:39	71.1	73.9	69.5	3.9
15/10/2021	Sunny	12:37	-	13:07	71.0	75.1	69.4	2.2
21/10/2021	Fine	15:33	-	16:03	71.0	73.7	69.0	4.2
27/10/2021	Sunny	10:29	-	10:59	70.2	73.9	69.0	2.5

Location: The Coronation Tower 1 (W-P11)

Monitoring date: 4, 11, 15, 21 and 27 October 2021

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)
04/10/2021	Sunny	15:26	-	15:56	70.0	71.4	68.6	2.8
09/10/2021	Rescheduled to 11/10/2021 due to adverse weather							
11/10/2021	Fine	14:00	-	14:30	69.5	72.9	67.0	4.2
15/10/2021	Sunny	13:36	-	14:06	71.2	74.4	68.4	2.8
21/10/2021	Fine	16:22	-	16:52	70.8	73.6	68.2	3.6
27/10/2021	Sunny	11:14	-	11:44	70.9	73.3	68.9	3.3

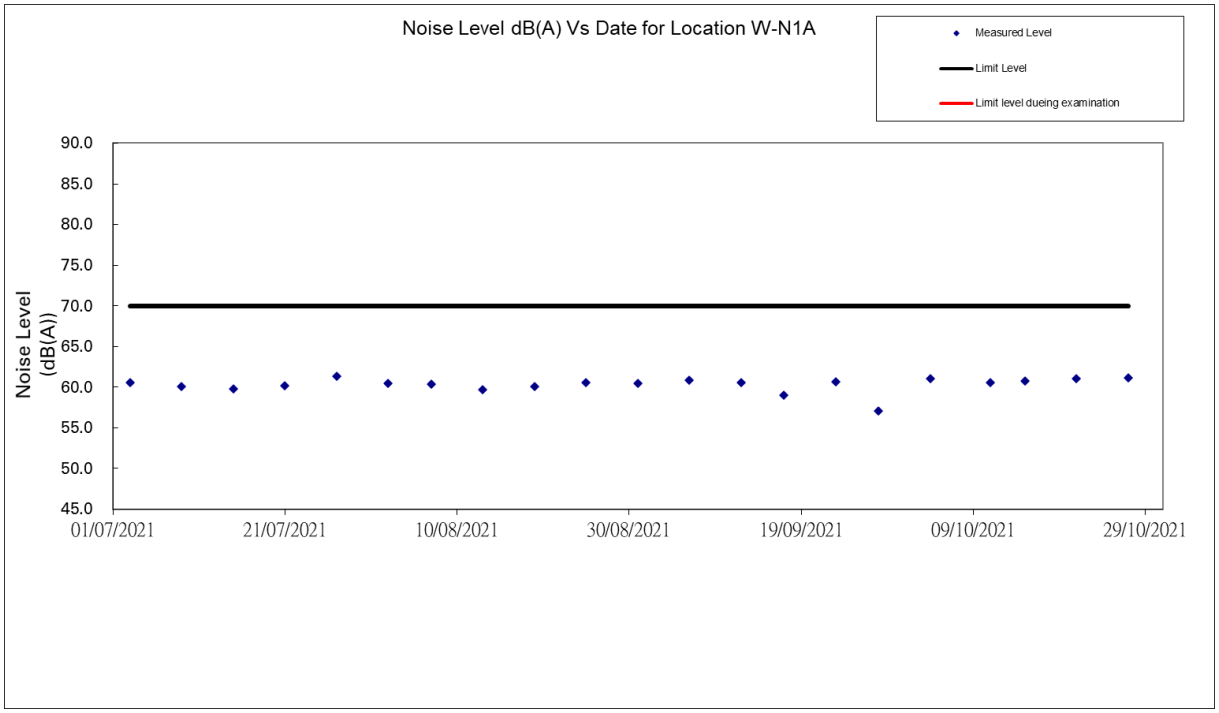

Figure 1: Graphical Illustration of Measured Noise Levels at W-N1A

Remark: No examination was at W-N1A in the reporting month so limit levels for all monitoring days were 70 dB(A).

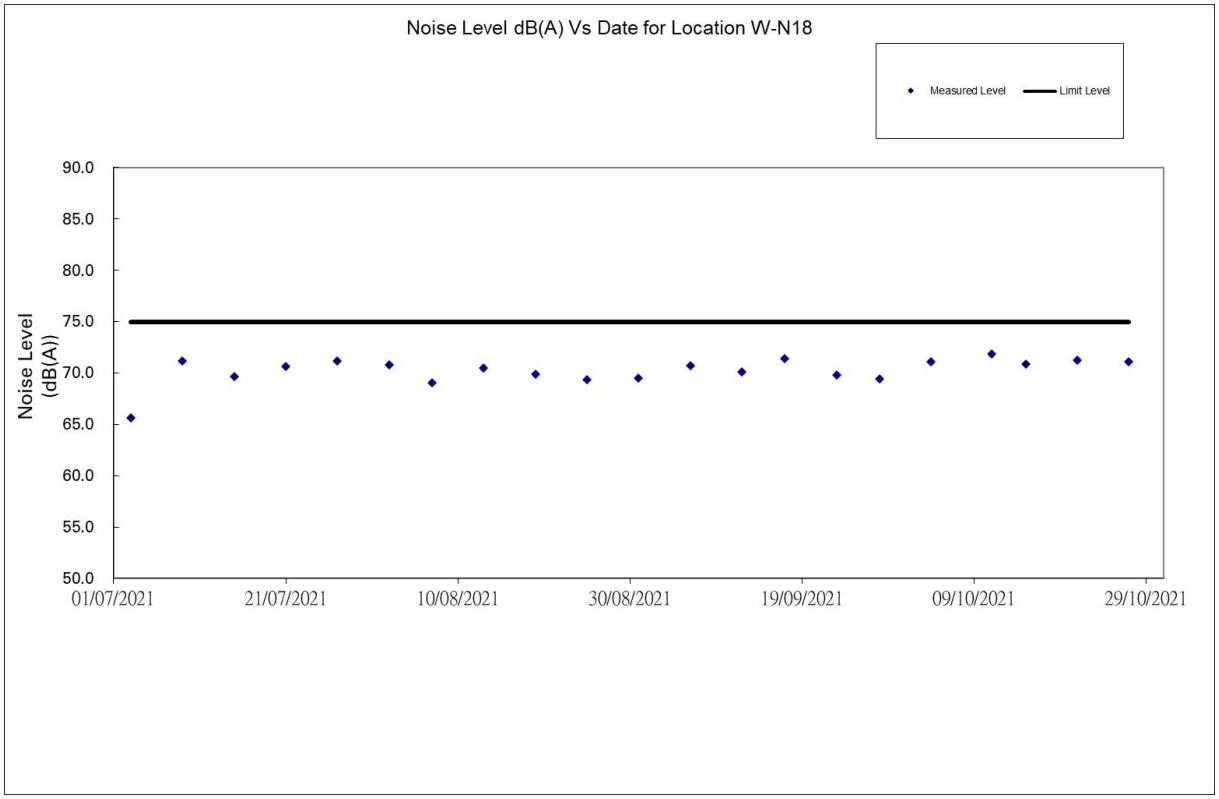

Figure 2: Graphical Illustration of Measured Noise Levels at W-N18

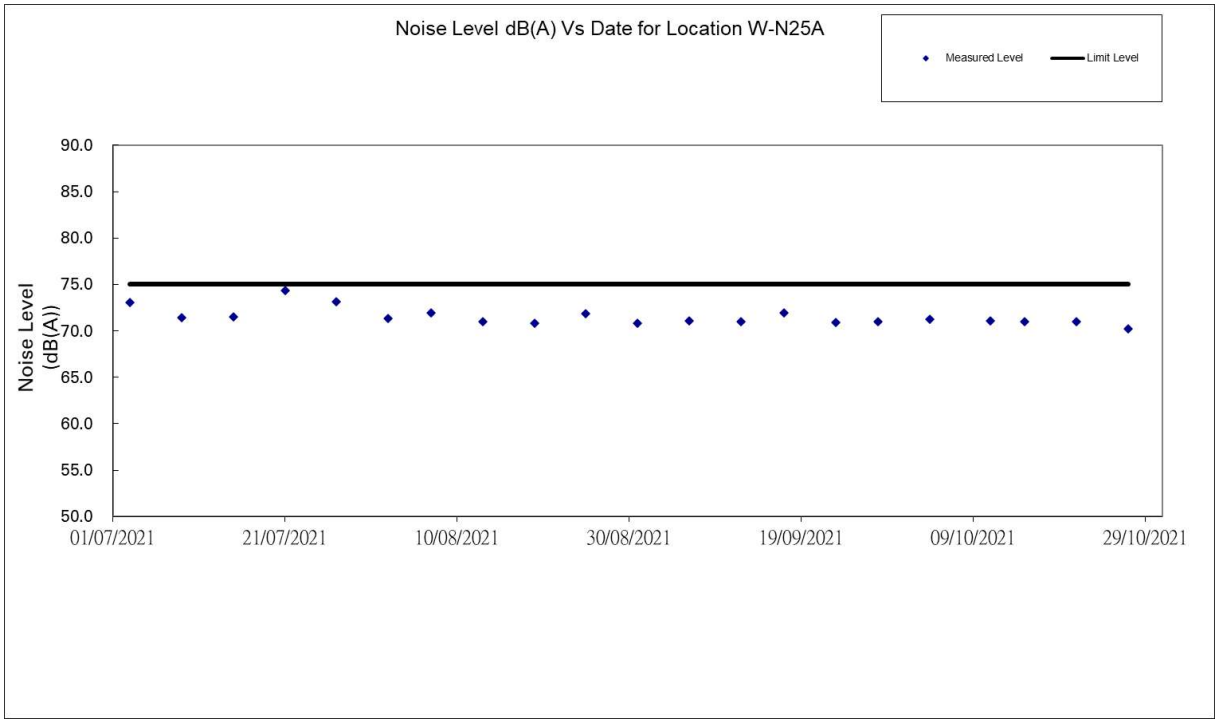

Figure 3: Graphical Illustration of Measured Noise Levels at W-N25A

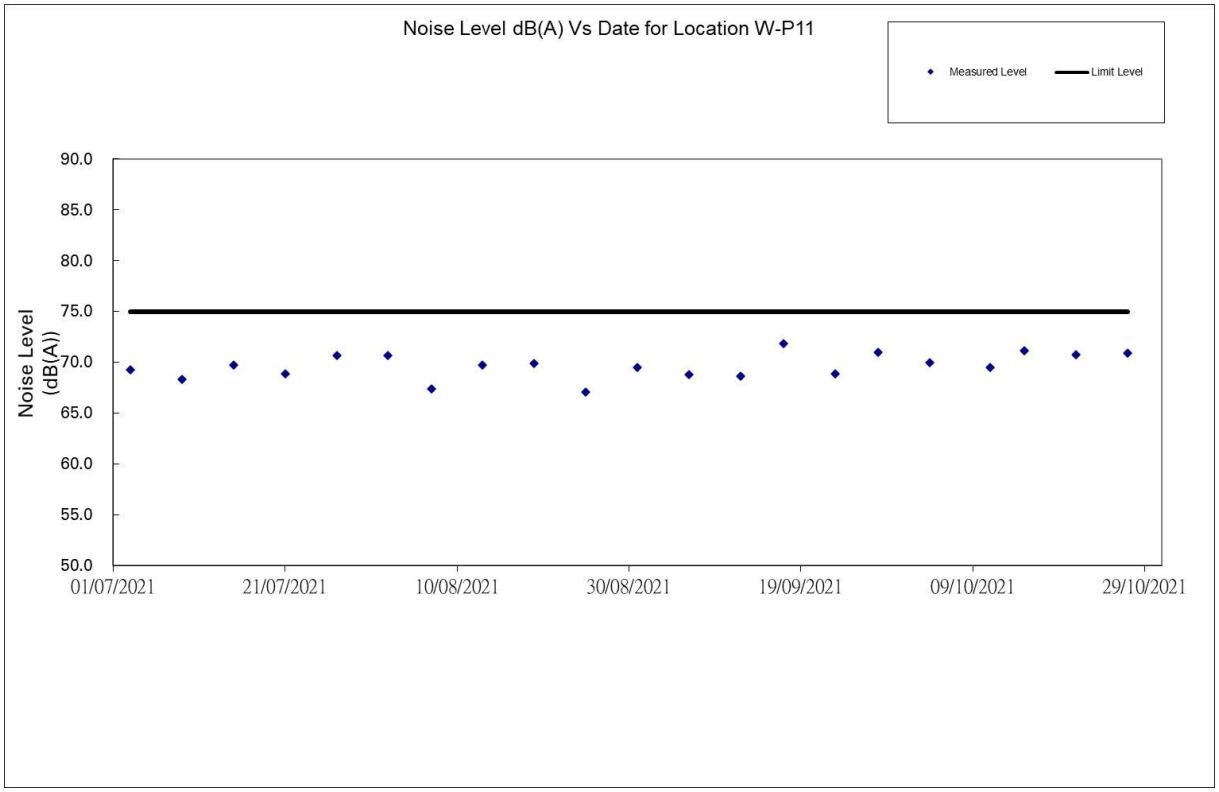

Figure 4: Graphical Illustration of Measured Noise Levels at W-P11

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 October 2021

[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)
Jan-21	13761.2	0.0	5785.1	5661.8	2170.7	0.0
Feb-21	15882.4	0.0	0.0	11251.5	4597.2	0.0
Mar-21	30776.4	0.0	0.0	17364.9	13362.1	0.0
Apr-21	20204.5	0.0	4366.8	10286.1	5396.5	0.0
May-21	22810.5	0.0	0.0	1336.6	21381.2	0.0
Jun-21	13298.3	0.0	0.0	64.0	13002.8	0.0
Sub-total	116733.3	0.0	10151.9	45964.9	59910.5	0.0
Jul-21	21204.9	0.0	3459.4	3449.1	13252.8	1002.0
Aug-21	19256.8	0.0	0.0	9522.4	9667.8	0.0
Sep-21	14632.0	0.0	0.0	4213.3	9915.8	0.0
Oct-21	13017.6	0.0	2956.0	3172.0	6852.9	0.0
Nov-21						
Dec-21						
Total	184844.6	0.0	16567.3	66321.7	99599.8	1002.0
2018	15.7	0.0	0.0	0.0	0.0	0.0
2019	71720.3	0.0	5534.0	8066.8	57342.1	415.6
2020	168891.4	0.0	15437.3	84381.5	68187.8	180.0
Accumulated Total	428472.0	0.0	37538.6	158770.0	225129.5	1597.6

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
Jan-21	118.1	0.0	0.03	0.0	0.2	0.0	0.0	0.0	25.2
Feb-21	0.0	0.0	0.04	0.0	0.2	0.0	0.0	0.0	33.5
Mar-21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.4
Apr-21	128.0	0.0	0.03	0.0	0.3	0.0	0.0	0.0	26.8
May-21	45.7	0.0	0.02	0.0	0.2	0.0	0.0	0.0	46.8
Jun-21	187.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	43.9
Sub-total	479.1	0.0	0.1	0.0	1.2	0.0	0.0	0.0	225.6
Jul-21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.6
Aug-21	0.0	0.0	0.04	0.0	0.6	0.0	0.0	0.0	66.0
Sep-21	466.6	0.0	0.0	0.0	0.5	0.0	0.0	0.0	35.8
Oct-21	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	36.4
Nov-21									
Dec-21									
Total	945.7	0.0	0.16	0.0	2.6	0.0	0.0	0.0	405.4
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
2020	359.1	0.0	0.4	0.0	3.2	0.0	0.9	0.0	341.2
Accumulated Total	1304.8	106.0	0.6	0.2	5.8	1.5	3.0	0.0	1014.3

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 October2021- 31 October 2021	0	1	N/A

Statistical Summary of Environmental Non-compliance

Reporting Period	**Environmental Non-compliance Statistics**		
	Frequency	**Cumulative**	**Details**
1 October2021- 31 October 2021	0	0	N/A

Statistical Summary of Environmental Summons

Reporting Period	**Environmental Summons Statistics**		
	Frequency	**Cumulative**	**Details**
1 October2021- 31 October 2021	0	0	N/A

Statistical Summary of Environmental Prosecution

Reporting Period	**Environmental Prosecution Statistics**		
	Frequency	**Cumulative**	**Details**
1 October2021- 31 October 2021	0	0	N/A

Appendix P
Monitoring Schedule of the Coming Month

Impact Monitoring Schedule for YMTW

Nov-21						
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					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	
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				

Central Kowloon Route

Buildings, Electrical and Mechanical Works

Contract No. HY/2019/13

(Yau Ma Tei West Area)

Gammon Construction Limited

Contract No. HY/2019/13
Central Kowloon Route – Buildings, Electrical and Mechanical Works

Monthly EM&A Report No. 13
(October 2021)

Version 1

Date of Report: 8 November 2021

Certified By	
	(Environmental Team Leader: Ms. Betty Choi)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties

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Email: info@cinotech.com.hk

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

ERM

Environmental Permit No. EP-457/2013/D

Central Kowloon Route

Independent Environmental Checker Verification

Works Contract:	**Buildings, Electrical and Mechanical Works (HY/2019/13)**

Reference Document/Plan

~~Document~~/Plan to be ~~Certified~~/ Verified:	Monthly EM&A Report No.13
Date of Report:	8 November 2021 (Version 1)
Date received by IEC:	8 November 2021

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/D.

Ms Mandy To Date: 9 November 2021

Independent Environmental Checker

Our ref: 0436942_IEC Verification Cert_BEM_Monthly EM&A Rpt No.13_2021109.docx

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EXECUTIVE SUMMARY

Introduction

1. This is the 13th Monthly Environmental Monitoring and Audit (EM&A) Report prepared by the Environmental Team (ET), Cinotech Consultants Ltd., for Contract No. HY/2019/13 "Central Kowloon Route – Buildings, Electrical and Mechanical Works". This report summarized the monitoring results and audit findings of the EM&A programme under the issued EP No. EP-457/2013/D, and in accordance with the EM&A programme in Yau Ma Tei West Area during the reporting period from 1st October 2021 – 31st October 2021.

2. The major site activities undertaken in Yau Ma Tei West Area in the reporting month included:
   - Piling works (pipe piles).

Environmental Monitoring Works

3. Environmental monitoring for the Project was performed in accordance with the EM&A Manual and the monitoring results were checked and reviewed. Joint weekly site inspections with the representative of ET, Engineer Representative and the Contractor were conducted on 5, 15, 19 & 26 October 2021, whereas joint site inspection with the representative of IEC was conducted on 15 October 2021. The implementation of the environmental mitigation measures, Event and Action Plans and environmental complaint handling procedures were also checked.

4. A summary of the non-compliance (exceedance) during the reporting month (October 2021) and the investigation results and/or follow-up actions is provided below:

   Air Quality Monitoring
   - No Action/Limit Level exceedance for 1-hour TSP was recorded.
   - No Action/Limit Level exceedance for 24-hour TSP was recorded.

   Construction Noise Monitoring
   - No Action/Limit Level exceedance for day time construction noise monitoring was recorded in the reporting month.

   Landscape and Visual Monitoring
   - No non-conformity for landscape and visual was recorded.

Complaint Handling, Prosecution and Public Engagement

5. Summary of complaint/summons/prosecution in the reporting month is tabulated in **Table I**.

Table I Summary of Complaint/Summons/Prosecution in the Reporting Month

Event	Event Details		Follow-up/ Remedial Actions	Status/ Remarks
	Number	Brief Description		
Complaints Received	0	-	-	-
Notification of Summons and Prosecutions Received	0	-	-	-

Reporting Changes

6. There were no reporting changes during the reporting month.

Future Key Issues

7. The key works or activities will be anticipated in the coming two months are as follows:
   - Piling works (pipe piles).

1 INTRODUCTION

Background

1.1 Central Kowloon Route (CKR) is a 4.7km long dual 3-lane trunk road across Central Kowloon linking Yau Ma Tei Interchange in West Kowloon and the road network at Kai Tak Development and Kowloon Bay in East Kowloon. The underground tunnel section will be about 3.9km long. In particular, an underground tunnel of about 370m long in Kowloon Bay to the north of To Kwa Wan Typhoon Shelter will be constructed.

1.2 The Environmental Impact Assessment Report for Central Kowloon Route – Design and Construction (Register No.: AEIAR-171/2013) was approved under the Environmental Impact Assessment Ordinance (EIAO) on 11 July 2013. An Environmental Permit (EP No.: EP-457/2013) was issued on 9 August 2013. Variations of Environmental Permit (VEP) was subsequently applied and an EP (EP No. EP-457/2013/C) was issued on 16 January 2017. The latest EP (EP No. EP-457/2013/D) was issued by Environmental Protection Department (EPD) on 15 June 2021.

1.3 The construction of the CKR had been divided into different sections. This Contract No. HY/2019/13 – Central Kowloon Route – Buildings, Electrical and Mechanical Works ("The Project") will include the architectural, civil and structural construction works of Yau Ma Tei Ventilation Building (YVB), Ho Man Tin Ventilation Building (HVB), Kai Tak Ventilation Building (KVB) and Central Kowloon Route Administration Building (ADB) for the CKR. The landscaping and electrical and mechanical (E&M) works within the building sites will be involved as well.

1.4 Cinotech Consultants Limited was assigned as the Environmental Team (ET) to undertake the EM&A works for the Project. The construction of this Contract was commenced on 12th October 2020.

Purpose of the Report

1.5 This is the 13th Monthly EM&A Report which summarises the impact monitoring results and audit findings for the EM&A programme in Yau Ma Tei West Area during the reporting period from 1st October 2021 – 31st October 2021. The Yau Ma Tei West Area site layout plan for the Project is shown in **Figure 1.1**.

Project Organizations

1.6 Different Parties with different levels of involvement in the project organization include:

- Project Proponent – Highways Department (HyD)
- Engineer Representative (ER) – Arup – Mott MacDonald Joint Venture (AMMJV)
- Environmental Team (ET) – Cinotech Consultants Limited (Cinotech)
- Independent Environmental Checker (IEC) – Environmental Resources Management - Hong Kong Limited (ERM)
- Contractor – Gammon Construction Limited (GCL)

1.7 The key contacts of the Project are shown in **Table 1.1**.

Table 1.1 Key Project Contacts

Party	Role	Contact Person	Phone No.
AMMJV	Engineer Representative	Mr. Dennis Yu	3695 0419
Cinotech	Environmental Team	Ms. Betty Choi	2151 2072
ERM	Independent Environmental Checker	Ms. Mandy To	2271 3313
GCL	Contractor	Mr. Harry Lam	9353 6141

1.8 The Organizational Structure for Environmental Management is shown in **Figure 1.2**.

Construction Activities undertaken during the Reporting Month

1.9 The construction programme is presented in **Appendix A**.

1.10 The major site activities undertaken in the reporting month included:

- Piling works (pipe piles).

Summary of EM&A Requirements

1.11 The EM&A programme requires air quality monitoring, construction noise monitoring, landscape and visual monitoring and environmental site audit. The EM&A requirements for each parameter are described in the following sections, including:

- Environmental requirements and mitigation measures, as recommended in the EM&A Manual under the EP.

1.12 The advice on the implementation status of environmental protection and pollution control/mitigation measures is summarized in Section 6 of this report.

Statues of Environmental Licensing and Permitting

1.13 All permits/licenses obtained for the Project are summarized in **Table 1.2**.

Table 1.2 Summary of Environmental Licensing and Permit Status

Permit / License No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
EP-457/2013/D	15 Jun 2021	N/A	Valid
Notification of Construction Works under Air Pollution Control Ordinance (APCO)			
457325	18 Jun 2020	End of Project	Valid
Billing Account for Construction Waste Disposal			
7037679	26 Jun 2020	N/A	Valid
Registration of Chemical Waste Producer – YVB			
5117-253-G2347-55	27 Jul 2020	N/A	Valid
Wastewater Discharge Licence - YMT			
WT00036898-2020	25 Nov 2020	30 Nov 2025	Valid
Construction Noise Permit (YVB Site - General Works [Grouting, Piling])			
GW-RE0706-21	28 July 2021	25 Jan 2022	Valid
Construction Noise Permit (YVB Site - TTA Works)			
GW-RE1001-21	10 Oct 2021	28 Nov 2021	Valid

2 AIR QUALITY

Monitoring Requirements

2.1 As all of the air quality (1-hour TSP and 24-hour TSP) monitoring works in Yau Ma Tei West Area are currently covered under the Contract No. HY/2014/20 (Central Kowloon Route - Yau Ma Tei West), the corresponding monitoring parameters, equipment, methodology, results and established Action and Limit Levels could be referred to Section 3 of the EM&A report for Contract No. HY/2014/20 during this reporting month.

Observations

2.2 No Action/Limit Level exceedance was recorded for all 1-hour TSP and 24-hour TSP monitoring in the reporting month.

2.3 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of air quality mitigation measures within the site boundaries of this Project. The summary of site audits are shown in **Table 6.1** of this report**.**

3 NOISE

Monitoring Requirements

3.1 As all of the construction noise monitoring works in Yau Ma Tei West Area are currently covered under the Contract No. HY/2014/20 (Central Kowloon Route - Yau Ma Tei West), the corresponding monitoring parameters, equipment, methodology, results and established Action and Limit Levels could be referred to Section 3 of the EM&A report for Contract No. HY/2014/20 during this reporting month.

Observations

3.2 No Action/Limit Level exceedance was recorded for all construction noise monitoring in the reporting month.

3.3 Site audits were carried out on a weekly basis to monitor and audit the timely implementation of construction noise mitigation measures within the site boundaries of this Project. The summary of site audits are shown in **Table 6.1** of this report**.**

4 WASTE MANAGEMENT

Monitoring Requirements

4.1 Waste generated from this Project includes inert construction and demolition (C&D) materials and non-inert C&D materials. Inert C&D waste includes soil, broken rock, broken concrete and building debris, while non-inert C&D materials are made up of C&D waste which cannot be reused or recycled and has to be disposed of at the designated landfill sites.

Results and Observations

4.2 The quantities of different types of waste generated in the reporting month are summarised in **Table 4.1**. Details of the amount of wastes generated by the major site activities of this Project during the reporting month is shown in **Appendix B**.

Table 4.1 Quantities of Waste Generated from the Project

Quantity							
	Inert C&D Materials		Non-inert C&D Materials				
Reporting Period	Total Quantity Generated (in '000m^3)	Disposed as Public Fill (in '000m^3)	Others, e.g. general refuse (in '000m^3)	Metals (in '000kg)	Paper/cardboard Packaging (in '000kg)	Plastics (in '000kg)	Chemical waste (in '000kg)
October 2021	0.877	0.877	0.003	0	0	0	0

4.3 Site audits were carried out on a weekly basis to monitor and audit to ensure that proper storage, transportation and disposal practices of waste materials generated during construction activities, such as construction and demolition (C&D) materials and general refuse are being implemented. The summary of site audits are shown in **Table 6.1** of this report**.** The implementation status of the waste/chemical management measures in the reporting period are summarized in **Appendix C**.

5 LANDSCAPE AND VISUAL

Monitoring Requirements

5.1 According to the EM&A Manual, site audits would be undertaken during the construction phase of the Project to check that the proposed landscape and visual mitigation measures are properly implemented and maintained as per their intended objectives. Site inspections of the implementation of landscape and visual mitigation measures would be undertaken at least once every two weeks during the construction period.

Results and Observations

5.2 Bi-weekly inspection of the implementation of landscape and visual mitigation measures within the site boundaries of this Project was conducted on 15 & 26 October 2021. The implementation status of the landscape and visual mitigation measures in the reporting period are summarized in **Appendix C**. The summary of observations and recommendations made for landscape and visual mitigation measures during site audits are shown in **Table 6.1** of this report**.**

5.3 No non-compliance of the landscape and visual impact was recorded in the reporting month.

6 ENVIRONMENTAL AUDIT

Site Audits

6.1 Site audits were carried out on a weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Project site.

6.2 Site audits were conducted on 5, 15, 19 & 26 October 2021 in the reporting month. Joint site inspection with the representative of IEC was conducted on 15 October 2021. No non-compliance was observed during the site audit.

Implementation Status of Environmental Mitigation Measures

6.3 According to Environmental Permit, the approved EIA Report (Register No.: AEIAR-171/2013), and the EM&A Manual of the Project, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix C**.

6.4 The ET weekly site inspections were carried out during the reporting month and the observations and follow-up actions in Yau Ma Tei West Area are summarized in **Table 6.1**.

Table 6.1 Observations and Recommendations of Site Inspections

Parameters	Date	Observations	Follow-up Actions
Water Quality	5 Oct 2021	The stagnant water on drip tray should be removed at Yau Ma Tei Ventilation Building Site.	The stagnant water on drip tray had been removed at Yau Ma Tei Ventilation Building Site.
Air Quality	N/A	No environmental deficiency was identified in the reporting period.	N/A
Noise	N/A	No environmental deficiency was identified in the reporting period.	N/A
Waste / Chemical Management	19 Oct 2021	Waste skip should be cleared regularly at Yau Ma Tei Ventilation Building Site.	Waste skip had been cleared regularly at Yau Ma Tei Ventilation Building Site.
Land Contamination	N/A	No environmental deficiency was identified in the reporting period.	N/A
Landscape and Visual	N/A	No environmental deficiency was identified in the reporting period.	N/A
Permits /Licences	N/A	No environmental deficiency was identified in the reporting period.	N/A

Implementation Status of Event and Action Plans

6.5 The Event and Action Plans for air quality and construction noise could be referred to Appendices D and E of the EM&A report in Contract No. HY/2014/20 respectively.

Air Quality Monitoring

- No Action/Limit Level exceedance for 1-hour TSP was recorded.
- No Action/Limit Level exceedance for 24-hour TSP was recorded.

Construction Noise Monitoring

- No documented complaint on construction noise was received; no Action Level exceedance for day time construction noise monitoring was recorded.
- No Limit Level exceedance for day time construction noise monitoring was recorded in the reporting month.

Landscape and Visual Monitoring

- No non-conformity for landscape and visual was recorded.

Summary of Complaint, Warning, Notification of any Summons and Successful Prosecution

6.6 No environmental complaints, warning, notifications of summons and successful prosecutions was received in the reporting month. The summary of environmental complaint, warning, summon and notification of successful prosecution for the Project is presented in **Appendix D**.

Status of Required Submission under Environmental Permit

6.7 Status of required submission under EP-457/2013/D during the reporting period are summarized in **Table 6.2**.

Table 6.2 Status of Required Submission under Environmental Permit

EP Condition (EP-457/2013/D)	Submission	Submission Date
Condition 3.4	Monthly EM&A Report (September 2021)	13 October 2021

7 FUTURE KEY ISSUES

7.1 Major site activities undertaken for the coming two months include:

- Piling works (pipe piles).

7.2 Key environmental issues in the coming two months include:

- Stockpile accumulation on-site;
- Water spraying for dust generating activities and on haul road;
- Wastewater and runoff discharge from site;
- Coverage of open manholes to avoid dirty runoff to drainage system;
- Noise from operation of the equipment, especially for excavation works and machinery onsite;
- Accumulation of general refuse and construction waste on-site;
- Proper storage of construction materials on-site; and
- Storage of chemicals/fuel and chemical waste/waste oil on-site.

8 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

8.1 This is the 13th Monthly EM&A Report which presents the EM&A works undertaken in Yau Ma Tei West Area during the reporting month from 1st October 2021 – 31st October 2021 in accordance with the EM&A Manual and the requirements under the EP.

Air Quality Monitoring

8.2 No Action/Limit Level exceedance was recorded for all 1-hour and 24-hour TSP monitoring in the reporting month.

Construction Noise Monitoring

8.3 No Action/Limit Level exceedance was recorded for all noise monitoring in the reporting month.

Landscape and visual

8.4 No non-compliance was recorded in the reporting month.

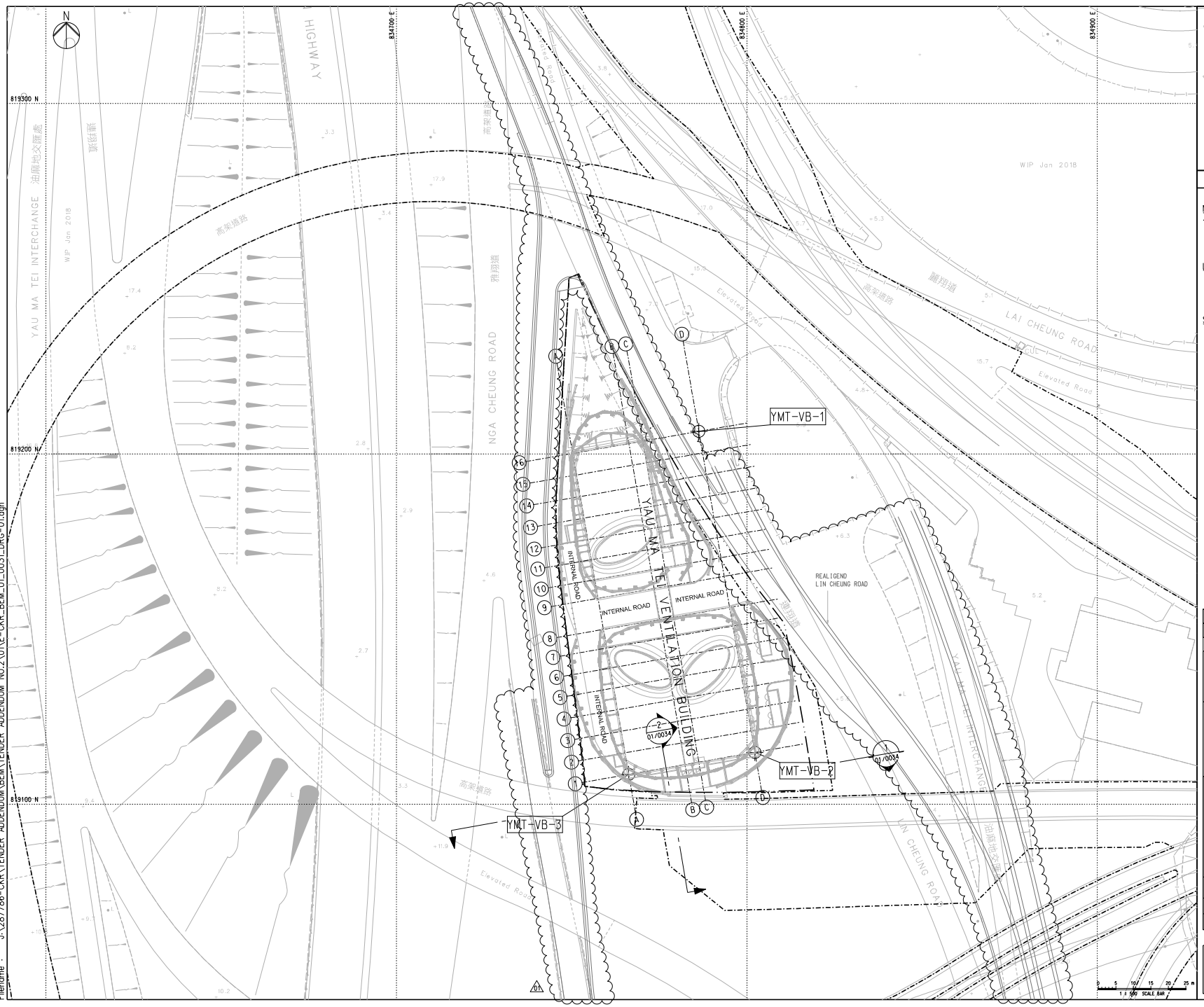
Site Audit

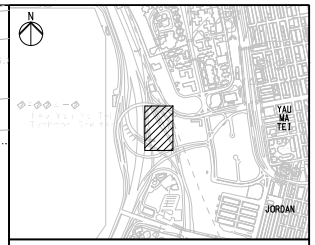
8.5 4 ET joint weekly environmental site inspections were conducted in the reporting month. Joint weekly site inspections with the representative of ET, Engineer Representative and the Contractor were conducted on 5, 15, 19 & 26 October 2021, whereas joint site inspection with the representative of IEC was conducted on 15 October 2021. All environmental deficiencies observed during site inspections were rectified by the Contractor.

Complaint, Notification of Summons and Successful Prosecution

8.6 No environmental complaints, notifications of summons and successful prosecutions were received in the reporting month.

FIGURES





KEY PLAN

NOTES:

1. FOR NOTES AND LEGEND, REFER TO DRAWING NO. CKR/BEM/01/0011.

LEGEND:

BOUNDARIES OF THE SITE

BUILDING SITE BOUNDARY

SETTING OUT TABLE

SETTING OUT POINT	COORDINATES EASTING	NORTHING
YMT-VB-1	834786.297	819306.422
YMT-VB-2	834802.292	819114.808
YMT-VB-3	834766.286	819308.522

Rev. 修訂	Description 內容摘要	By 設計	Date 日期
01	TENDER ADDENDUM NO. 2	ML	11/19
00	ISSUE FOR TENDER	AL	09/19

ARUP M MOTT MACDONALD M

Arup-Mott MacDonald Joint Venture

Project title 工程名稱

Contract No. HY/2019/13

Central Kowloon Route - Buildings, Electrical and Mechanical

Drawing title 圖紙名稱

GENERAL LAYOUT PLAN
YAU MA TEI VENTILATION BUILDING

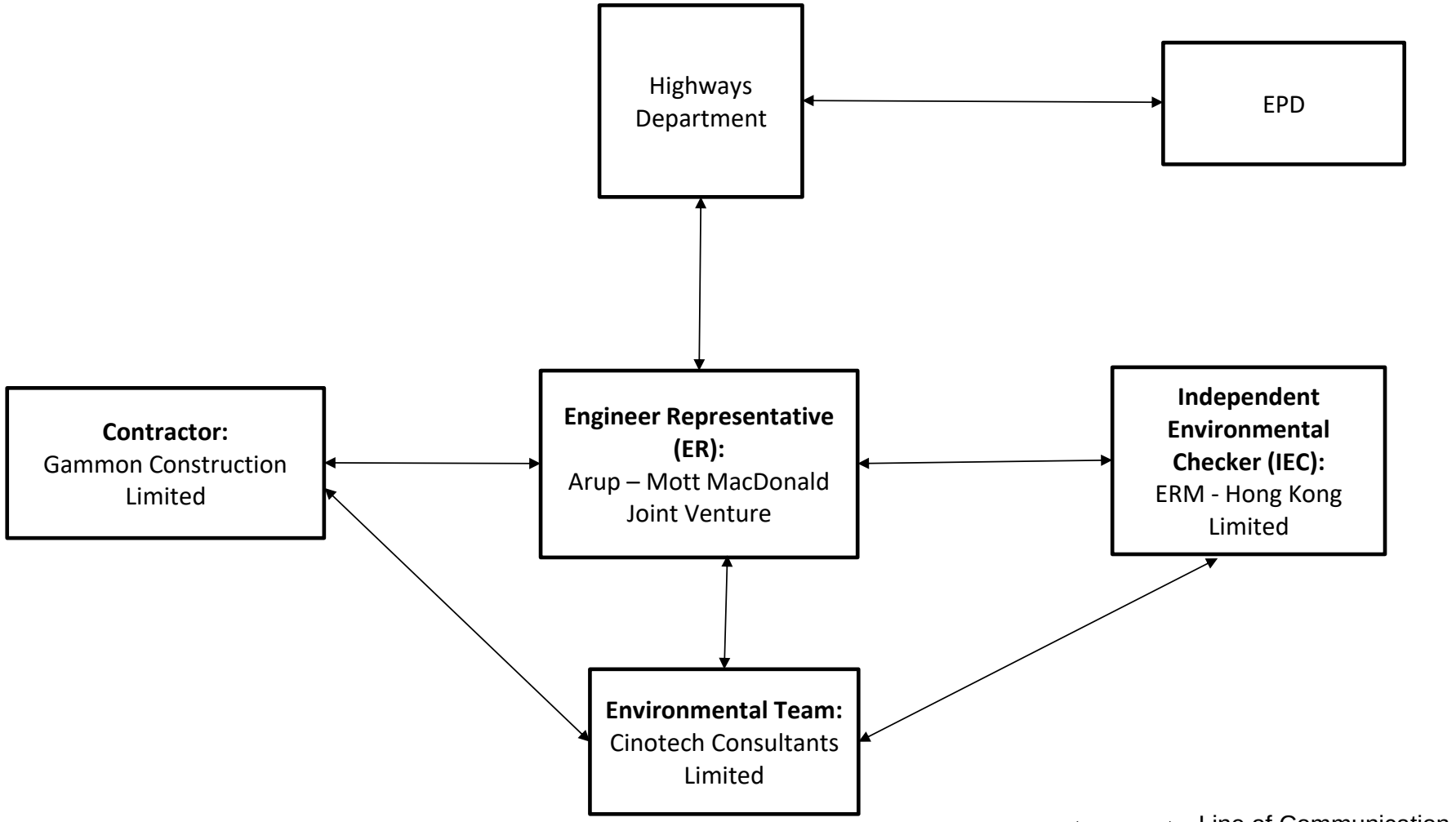
Drawing no. 圖紙編號		Rev. 修訂
	1.1	01

Drawn By 繪圖	Checked By 檢查	Approved By 認可人
ML	JC	RC

Scale 比例	Status 階段
1:500 @ A1	TENDER

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

Printed by : 11/28/2019
Filename : J:\287786-CKR\TENDER ADDENDUM\BEM\TENDER ADDENDUM NO.2\01\E-CKR_BEM_01_0031_DRG-01.dgn



CINOTECH

Contract No. HY/2019/13
Central Kowloon Route – Buildings, Electrical and Mechanical Works

Project Organisation For Environmental Monitoring and Audit

SCALE	N.T.S.	**DATE**	Nov 2020
CHECK	BC	**DRAWN**	EH
JOB NO.	MA20024	**FIGURE NO.**	1.2

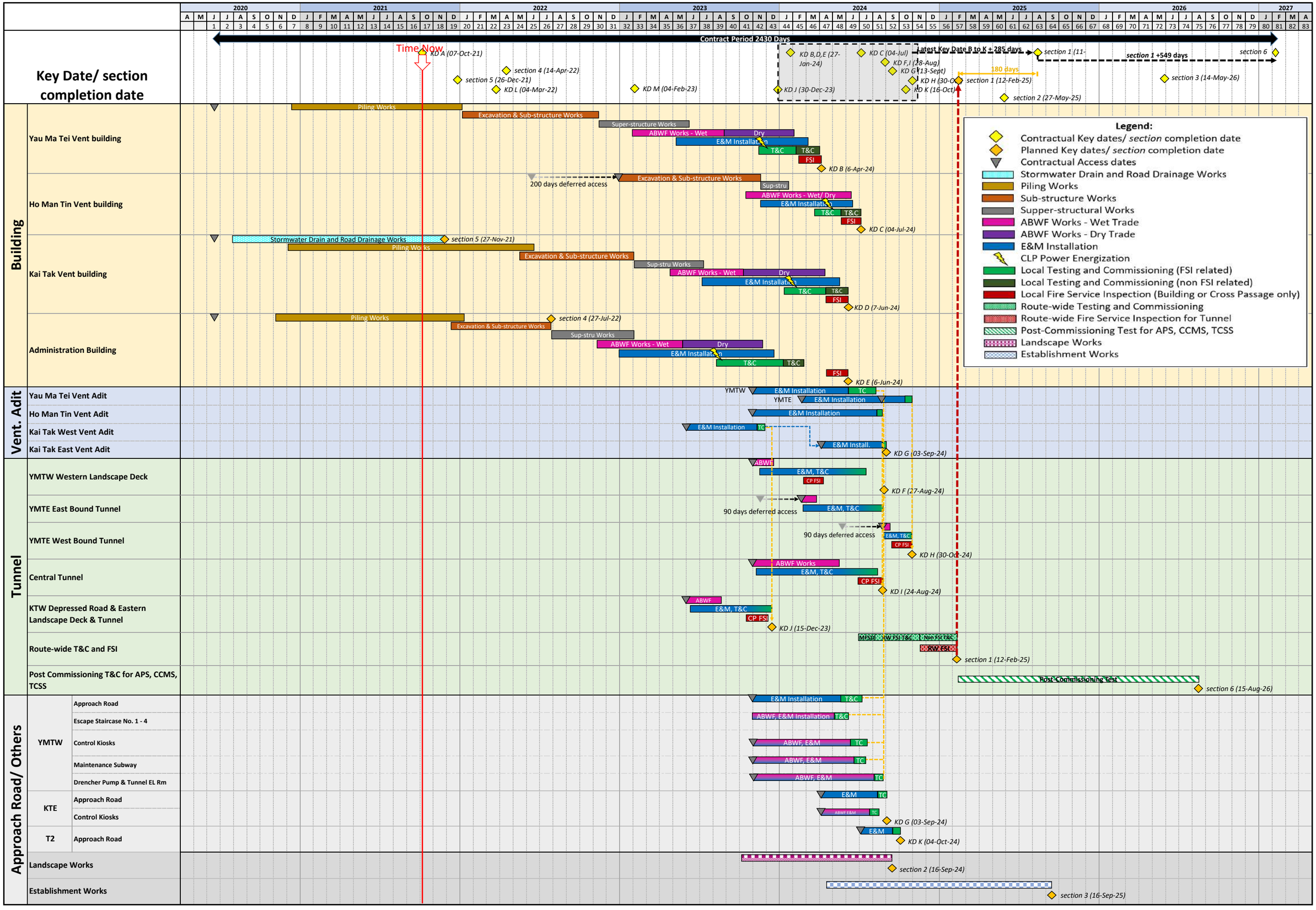
APPENDIX A
CONSTRUCTION PROGRAMME

Gammon

Ref. Detailed Programme (Apr-2021)

Contract No. HY/2019/13
Central Kowloon Route – Buildings, Electrical and Mechanical Works
Summary Programme

HIGHWAYS DEPARTMENT 路政署 土木工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE



APPENDIX B
SUMMARY OF WASTE GENERATION AND DISPOSAL RECORDS

Monthly Summary Waste Flow Table

Name of Department: HyD

Contract No.: HY/2019/13
Central Kowloon Route - Buildings, Electrical and Mechanical Works
Yau Ma Tei Site Area

Monthly Summary Waste Flow Table for 2021 (year)

	Actual Quantites of Inert C&D Materials Generated Monthly						Actual Quantites of C&D Waste Generated Monthly					
Month	Total Quantity Generated (in '000m3)	Hard Rock and Large Broken Concrete (see Note 5) (in '000m3)	Reused in the Contract (see Note 5) (in '000m3)	Reused in other Projects (see Note 5) (in '000m3)	Disposed as Public Fill (see Note 5) (in '000m3)	Imported Fill (see Note 5) (in '000m3)	Metals (in '000kg)	Paper / cardboard packaging (in '000kg)	Plastics (see Note 3) (in '000kg)	Chemical Waste (see Note 5) (in '000kg)	Marine Sediment (see Note 7) (in '000m3)	Others, e.g. general refuse (see Note 5) (in '000m3)
Jan	0.300	0	0	0	0.300	0	0	0	0	0	0	0.017
Feb	0.306	0	0	0	0.306	0	0	0	0	0	0	0.011
Mar	0.399	0	0	0	0.399	0	0	0	0	0	0	0.005
Apr	0.405	0	0	0	0.405	0	0	0	0	0	0	0.004
May	0.646	0	0	0	0.646	0	0	0	0	0	0	0.008
Jun	1.148	0	0	0	1.148	0	0	0	0	0	0	0.006
Sub-Total	**3.204**	**0**	**0**	**0**	**3.204**	**0**	**0**	**0**	**0**	**0**	**0**	**0.051**
Jul	1.650	0	0	0	1.650	0	0	0	0	0	0	0.017
Aug	0.842	0	0	0	0.842	0	0	0	0	0	0	0.009
Sep	0.751	0	0	0	0.751	0	0	0	0	0	0	0.005
Oct	0.877	0	0	0	0.877	0	0	0	0	0	0	0.003
Nov												
Dec												
Total (2021)	**7.324**	**0**	**0**	**0**	**7.324**	**0**	**0**	**0**	**0**	**0**	**0**	**0.085**
Total (whole)	**30.201**	**0**	**0**	**10.932**	**19.269**	**0**	**0**	**0**	**0**	**0**	**0**	**0.321**

Note:

(1) The performance targets are given in PS Clause 25.24

(2) The waste flow table shall also include C&D materails that are specified in the Contract to be imported for use at the Sites.

(3) Plastics refer to plastic bottles/containers, plastic sheets/foam from packaging materials, and water barriers

(4) The summary table shall be submitted to the Project Manager monthly together with the Waste Flow Table for review and monitoring in accordance with the PS Clause 25.24

(5) Density values and Bulk Factors adopted:

Hard Rock and Large Broken Concrete:	2.4 T/m3 (in-situ)	Bulk Factor:	1.25
Soil / Fill:	2.0 T/m3 (in-situ)	Bulk Factor:	1.1
Marine Sediment:	1.7 T/m3 (in-situ)	Bulk Factor:	1.3
General Refuse:	400 kg/m3		
Chemical Waste (mainly used lubricant):	900 kg/m3		
Tree Trunk / Tree Stump:	850 kg/m3 (in-situ)	Bulk Factor:	1.1

(6) The reported and forecast volume figures are in "bulk" volume, with Bulk Factor applied as per Note (5)

(7) This figure refers to marine sediment disposed via dumping at sea. Treated Sediment for Reuse on-site will be categorized into "Reused in the Contract"

APPENDIX C
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern 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	^
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/m2 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	^
S4.3.10	D3	Proper watering at exposed spoil should be undertaken throughout the construction phase.	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	^
		Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading.						^
		Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads.						^
		A stockpile of dusty material should not be extended beyond the 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.						^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		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 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						^
		Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding.						N/A
		Any skip hoist for material transport should be totally enclosed by impervious sheeting.						N/A
		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						N/A
		Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed.						N/A
		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.						N/A

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		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.						N/A
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	^
Construction Noise (Airborne)								
S5.4.1	N1	Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme.	Control construction airborne noise	Contractor	All construction sites	Construction stage	- Annex 5, TM-EIAO	^
		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.						N/A
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	^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
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, screen the noisy plants including air compressors, generators and handheld breakers, etc.	Sreen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction stage	- Annex 5, TM-EIAO	N/A
S5.4.1	N4	Use 'Quiet plants'	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction stage	- Annex 5, TM-EIAO	^
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	^
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	^
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	^
Water Quality (Construction Phase)								
S6.9.1.1	W1	<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.	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	^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		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 maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m3/s a sedimentation basin of 30 m3 would be required and for a flow rate of 0.5 m3/s the basin would be 150 m3. The detailed design of the sand/ silt traps shall be undertaken by the contractor prior to the commencement of construction.						^
		All exposed earth areas should be completed and vegetated as soon as 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.						N/A
		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.						N/A
		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 of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.						^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.						^
		Manholes should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.						^
		Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.						^
		All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and site wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the 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.						^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby.						^
		Adopt best management practices.						^
		All earth works should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable.						^
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.	To minimize construction water quality impact from tunneling works	Contractor	All tunneling portion	Construction stage	- Water Pollution Control Ordinance - ProPECC PN 1/94 - TM-EIAO - TM-DSS	N/A
		Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge.						N/A
		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.						N/A
		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.						N/A

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern 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	^
S6.9.1.5	W4	Groundwater from Potential Contaminated Area: No direct discharge of groundwater from contaminated areas should be adopted.	To minimize groundwater quality impact from contaminated area	Contractor	Excavation areas where contamination is found	Construction stage	- Water Pollution Control Ordinance - TM-EIAO - TM-DSS	^
		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 recharged into the ground.						^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		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 interceptor.						N/A
S6.9.1.6	W6	<u>Accidental Spillage</u> 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.	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	^
		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.						^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
Waste Management (Construction Waste)								
S7.4.1	WM1	<u>On-site sorting of C&D material</u> Geological assessment should be carried out by competent persons on site during excavation to identify materials which are not suitable to use as aggregate in structural concrete (e.g. volcanic rock, Aplite dyke rock, etc.). Volcanic rock and Aplite dyke rock should be separated at the source sites as far as practicable and stored at designated stockpile area preventing them from delivering to crushing facilities. The crushing plant operator should also be reminded to set up measures to prevent unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural 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.	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use	Contractor	All construction sites	Construction stage	· DEVB (W) No. 6/2010	^
S7.5.1	WM2	<u>Construction and Demolition Material</u> Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement.	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	^
		Carry out on-site sorting.						^
		Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate						^
		Adopt ‘selective demolition’ technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible.						N/A
		Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified.						^
		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.						^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
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.	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	^
		The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.						N/A
S7.5.1	WM4	Excavated Contaminated Soils Details of the mitigation measures on handling of the contaminated soil shall be referred to Section on Land Contamination below.	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 of Contaminated Land · GN/GM for land contamination	^
S7.5.1	WM5	Land-based and Marine-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.	To control pollution due to marine sediment	Contractor	Along CKR alignment	Construction stage	· ETWB TCW No. 34/2002	^
		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.						N/A

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		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.						N/A
		Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action.						N/A
		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 and copies of such records shall be submitted to the engineers.						N/A
		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.						N/A
		The material shall be placed into the disposal pit by bottom dumping.						N/A
		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.						N/A
		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.						N/A
		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.						N/A

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern 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.	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	^
		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 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.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	· Waste Disposal Ordinance	^
		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.						^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		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.						^
Land Contamination								
S8.9 & Appendix 8.4	LC2	<u>Excavation of the Contaminated Soil</u> 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 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	N/A
		The excavated contaminated soils would be stockpiled at designated area on site and covered by sheet to prevent dispersion of contamination during stockpiling.						N/A
		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.						N/A
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	/	^
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	/	^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
Landscape and 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.	Minimize visual impact	Contractor	Within Project site	Construction Phase	/	^
		Construction plant and building material shall be orderly and carefully stored in order to create a neat and tidy visual appearance.						^
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 Phase	/	^
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 Phase	/	^
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 Phase	/	^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern 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 Phase	· '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	N/A
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 for trees unavoidably felled (See LV10). For trees unavoidably affected by the Project works that are transplanted, transplantation must be carried out in accordance with ETWB TCW 2/2004 and 3/2006.	Minimize landscape and visual impact	Contractor	Within Project site and designated off-site locations	Prior to Construction Phase	· ETWB TCW 3/2006 · Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DEVB · ETWB TCW 2/2004	N/A
S10.10.1 Table 10.11	LV9	Compensatory Planting 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.	Minimize visual impact and also enhance landscape	Contractor	Within Project site	Construction Phase	· ETWB TCW 3/2006 · Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DEVB · ETWB TCW 2/2004	N/A

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
S10.10.1 Table 10.11	LV10	Screen Planting Tall screen/buffer trees, shrubs and climbers should be planted, in so far as is possible, to soften and screen proposed structures such as roads and central strip, vertical edges and buildings and to enhance streetscape greening effect where appropriate. Indiscriminate use of trees for screening must be avoided and the principle of 'right tree for the right place' must be followed. This detail will be provided at the Detailed Design stage. This measure may additionally form part of the compensatory planting and will improve and create a pleasant pedestrian environment.	Minimize visual impact and also enhance landscape	Contractor	Within Project site	Construction Phase	· Guidelines on Greening of Noise Barriers, issued April 2012, GLTMS, DevB · ETWB TCW 2/2004	N/A
S10.10.1 Table 10.11	LV11	Green Roof Roof greening will be established on ventilation and administration buildings to reduce exposure to untreated concrete surfaces and particularly mitigate visual impact to VSRs at high levels.	Minimize landscape and visual impact	Contractor	Within Project site	Construction Phase	/	N/A
S10.10.1 Table 10.11	LV12	Reinstatement All works areas, excavated areas and disturbed areas for tunnel construction and temporary road diversion or any other proposed works shall be reinstated to former conditions or better, with reasonable landscape treatment and to the satisfaction of the relevant Government departments. (Specific mitigation for disturbance to public open space is detailed separately under LV14)	Minimize landscape impact	Contractor	Within Project site	Construction Phase	/	N/A
S10.10.1 Table 10.11	LV13	Reprovising of Public Open Space All areas of public open space affected by the Project will be reprovisioned either at the same location following the completion of temporary works, or at a separate site, as agreed with relevant Government departments. Open space should be re-provisioned in an enhanced manner.	Minimize landscape impact	Contractor	Within Project site	Construction Phase	Open space should be re-provided in an enhanced manner.	N/A
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	During the Construction Phase	· AMOs requirements	N/A

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
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	^
S13.2-13.4	EM2	An Environmental Team needs to be employed as per the EM&A Manual.	Perform environmental monitoring & auditing	Highways Department/ Contractor	All construction sites	Construction stage	· EIAO Guidance Note No. 4/2010 · TM-EIAO	^
		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.						^

Remarks: EM&A Programme under EP-457/2013/D	
^	Compliance of mitigation measure;
N/A N/A(1)	Not applicable at this stage; Not observed;
*	Recommendation was made during site audit but improved/retified by the contractor;
#	Recommendation was made during site audit but not yet improved/retified by the contractor;
X	Non-compliance of mitigation measure;
●	Non-compliance but rectified by the contractor.

APPENDIX D
SUMMARIES OF ENVIRONMENTAL COMPLAINT, WARNING, SUMMON AND NOTIFICATION OF SUCCESSFUL PROSECUTION

Contract No. HY/2019/13
Central Kowloon Route – Buildings, Electrical and Mechanical Works

Appendix D – Summary of Environmental Complaint, Warning, Summon and Notification of Successful Prosecution

Reporting Month: October 2021

Log Ref.	Location	Received Date	Details of Complaint/warning/summon and prosecution	Investigation/Mitigation Action	Status
N/A	N/A	N/A	N/A	N/A	N/A

Remarks: No environmental complaint/warning/summon and prosecution were received in the reporting period.