

MTR Corporation Limited

Sheung Shui to Lok Ma Chau Spur Line

Monthly EM&A Report for Kwu Tung Station

(November 2024)

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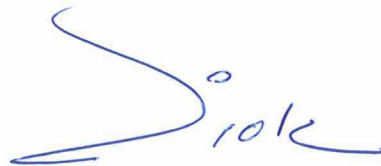
MTR Corporation Limited

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(November 2024)

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MTR Corporation Limited

Contract 1601

Kwu Tung Station on East Rail Line

Monthly EM&A Report (November 2024) (Version 2.0)

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EXECUTIVE SUMMARY

Introduction

Construction of Kwu Tung Station on East Rail Line [KTU(EAL)] (hereinafter referred to as "the Project") has commenced since February 2023.

Works Contract 1633 - Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works" was awarded to Kum Shing (K.F.) Construction Company Limited to carry out the alteration and additional works to the existing railway facilities within the Project Site in order to facilitate the future construction of the Project. Wellab Limited was appointed by Kum Shing as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme for the Works Contract 1633 from 20 February 2023 to 31 October 2023 in view of the completion of alteration and additional works in October 2023.

Works Contract 1601 - Kwu Tung Station on East Rail Line was awarded to Dragages Hong Kong Limited in September 2023 to carry out the main civil works for the Project. Aurecon Hong Kong Limited was commissioned by Dragages Hong Kong Limited as the ET to provide EM&A services and take over the EM&A programme of the Project from 1 November 2023 to ensure that the environmental performance of the Works Contractor complies with the requirements specified in the Environmental Permit (EP no. FEP-06/129/2002/I), Environmental Review Report (ERR) and Updated EM&A Manual under this EP for the Kwu Tung Station on the East Rail Line and other relevant statutory requirements. The weekly environmental site inspections and environmental monitoring as scheduled under EM&A programme was conducted by Aurecon with effect from 1 November 2023.

This is the 13th Monthly Environmental Monitoring and Audit (EM&A) Report for the Works Contract 1601 - Kwu Tung Station on East Rail Line (hereinafter called the "Works Contract") under Environmental Permit No. FEP-06/129/2002/I. This report was prepared by Aurecon Hong Kong Ltd. (Aurecon) which summaries findings of the EM&A programme during the reporting period from 1 November 2024 to 30 November 2024.

Breaches of Action and Limit Levels

Air Quality

1. No Action Level and Limit Level exceedance was recorded for air quality monitoring in the reporting month.

Construction Noise

2. No Action Level and Limit Level exceedance was recorded for construction noise monitoring in the reporting month.

Environmental Non-Compliance

3. No environmental non-compliance was recorded in the reporting month.

Complaint log

4. No complaint was received in the reporting period.

Notification of Summons and Successful Prosecutions

5. No notifications of summons and successful prosecutions were received in the reporting period.

Reporting Changes

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

Future Key Issues

7. The main works will be anticipated in the next three months are as follow:

Lower Platform:

Aboveground works

- Foundation and erection of tower cranes
- Construction of station structure

Station Tunnel Box:

Aboveground works

- Advance works for station permanent structure
 - i Concrete slab and screed removal
 - ii Waterproofing works
 - iii Construction of station structure

Underground works:

- Alteration and Additional works inside the tunnel box
 - i OTE precast removal/ dura steel installation
 - ii Concrete column removal
- E&M works inside the tunnel box

9. Potential environmental impacts arising from the above construction activities are mainly associated with construction dust, construction noise, water quality, waste management and landscape and visual impact issues.

1 PROJECT INFORMATION

1.1 Background

- 1.1.1 The Environmental Impact Assessment (EIA) report for “Sheung Shui to Lok Ma Chau Spur Line” (Register No.: AEIAR-052/2002) (hereafter called the “approved EIA”) conducted by Kowloon-Canton Railway Corporation (KCRC) was approved in 2002, and addressed the environmental impacts caused by the LMC Spur Line. As far as the railway station at Kwu Tung is concerned, the approved EIA had considered the potential construction and operational impacts for the railway station at Kwu Tung enabling works including the station box structure.
- 1.1.2 In December 2020, the MTR Corporation Limited (i.e., MTRCL, hereafter called the Project Proponent) was invited by the Government to commence the detail planning and design of the railway station at Kwu Tung.
- 1.1.3 The construction and operation of the LMC Spur Line constitutes to Item A.2 Designated Project (DP) “A railway and its associated stations”, under Part I Schedule 2 of Environmental Impact Assessment Ordinance (EIAO). KCRC had applied for and had been granted numbers of Environmental Permits (EPs) and Further Environmental Permits (FEP) for its construction and operation of LMC Spur Line, including the existing tunnel box and enabling works.
- 1.1.4 In order to expand the scope of the FEP (No. FEP-06/129/2002/H) held by MTRCL to cover the construction and operation of the proposed Kwu Tung Station on the East Rail Line (hereinafter called “the Project”), variation of this FEP was required. The Environmental Review Report (ERR) had been prepared and submitted under the VEP application. The VEP application had been approved and a new Environmental Permit (No. FEP- 06/129/2002/I) was granted by EPD on 24 December 2021.
- 1.1.5 Construction of Kwu Tung Station on East Rail Line [KTU(EAL)] has commenced since February 2023.
- 1.1.6 Works Contract 1633 - Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works" was awarded to Kum Shing (K.F.) Construction Company Limited to carry out the alteration and additional works to the existing railway facilities within the Project Site in order to facilitate the future construction of the Project. Wellab Limited was appointed by Kum Shing as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme for the Works Contract 1633 from 20 February 2023 to 31 October 2023 in view of the completion of alteration and additional works in October 2023.
- 1.1.7 Works Contract 1601 - Kwu Tung Station on East Rail Line was awarded to Dragages Hong Kong Limited in September 2023 to carry out the main civil works for the Project. Aurecon Hong Kong Limited was commissioned by Dragages Hong Kong Limited as the ET to provide EM&A services and take over the EM&A programme of the Project from 1 November 2023 to ensure that the environmental performance of the Works Contractor complies with the requirements specified in the Environmental Permit (EP no. FEP-06/129/2002/I), Environmental Review Report (ERR) and Updated EM&A Manual under this EP for the Kwu Tung Station on the East Rail Line and other relevant statutory requirements. The weekly environmental site inspections and environmental monitoring as scheduled under EM&A programme was conducted by Aurecon with effect from 1 November 2023.
- 1.1.8 This is the 13th monthly Environmental Monitoring and Audit (EM&A) Report for Contract 1601 Kwu Tung Station on East Rail Line under Environmental Permit No. FEP-06/129/2002/I. This report was prepared by Aurecon Hong Kong Ltd. (Aurecon) presenting the EM&A works carried out during the reporting period from 1 to 30 November 2024.
- 1.1.9 The scope of works under the Kwu Tung Station on the East Rail Line comprises the following:
- Excavation of the fill material above the existing tunnel box;

- Modification of existing tunnel box structures;
- Construction of concourse and platform areas;
- Construction of back-of-house areas;
- Construction of entrances, Ventilation Buildings (VB) and Fire Rescue Stairs (FRS);
- Modification of existing Emergency Access Point (EAP)/ Emergency Egress Point (EEP);
- Relocation of existing EVA and associated facilities; and
- Construction of other station associated facilities and underground adit.

1.1.10 The construction area of the Project is shown in **Figure 1**.

Project Organization

1.1.11 The project organization and contact details are shown in **Figure 3**.

Summary of Construction Works Undertaken During Reporting Month

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

Lower Platform:

Aboveground works

- Foundation and erection of tower cranes

Station Tunnel Box:

Aboveground works

- Advance works for station permanent structure
 - i Construction of station structure

Underground works

- Alteration and Additional works inside the tunnel
 - i Track level wall and slab construction
 - ii Coring for fire hydrant pipe
 - iii OTE precast removal / dura steel installation
- E&M works inside the tunnel box

Construction Programme

1.1.13 Construction Programme from the Contractor is given in **Appendix A**.

Status of Environmental Licenses, Notifications and Permits

1.1.14 A summary of the status of the relevant permits, licenses and/or notifications on environmental protection for this project is presented in **Table 1.1**.

Table 1.1 Relevant Environmental Licenses, Permits and/or Notifications

Environmental License / Permit / Notification	Reference Number	Valid From	Valid Till	Status
Environmental Permit for whole project	FEP-06/129/2002/I	24/12/2021	N/A	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation	Ref No.: 497363	22/09/2023	N/A	Valid
Billing Account for Disposal of	Account No.: 7048687	16/10/2023	N/A	Valid

Construction Waste				
Registration of Chemical Waste Producer	5213-545-D2939-01	08/12/2023	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance	Licence No.: WT10002429-2023	29/07/2024	31/03/2029	Valid (The licence was firstly granted on 20/03/2024, while the application for variation of licence was approved on 29/07/2024.)
Construction Noise Permit (CNP)	GW-RN0972-24	27/08/2024	26/11/2024	Expired after 26/11/2024
	GW-RN1001-24	30/08/2024	29/12/2024	Valid
	GW-RN1203-24	11/10/2024	10/03/2025	Valid
	GW-RN1226-24	17/10/2024	08/11/2024	Expired after 08/11/2024
	GW-RN1333-24	09/11/2024	08/01/2025	Valid

Submission Status under the Environmental Permits

1.1.15 The status of required submission under Environmental Permit (EP) conditions under FEP-06/129/2002/I are summarized in **Table 1.2**.

Table 1.2 Summary of Status of Required Submission for FEP-06/129/2002/I

EP Conditions (FEP-06/129/2002/I)	Submission	Submission Date
1.11	Notification of Commencement Date of Construction of the Project	19 January 2022
2.8	Updated Environmental Monitoring and Audit (EM&A) Manual (Oct 2022)	28 September 2022 (1st submission) 25 October 2022 (2nd submission) 7 November 2022 (Approved)
2.9	Management Organizations	18 January 2023 (1st submission) 1 November 2023 (2nd submission)
2.10	Project Layout Plan of Kwu Tung Station	11 November 2022 15 November 2022 (Deposited)
2.11	Landscape and Visual Plan	6 February 2023 (1st submission) 15 September 2023 (2nd submission) 18 September 2023 (Deposited)
4.3	Baseline Monitoring Report (Dec 2022)	9 December 2022
4.4	Monthly EM&A Report (October 2024)	14 November 2024

1.1.16 For the requirements of measures during operation of the existing LMC Spur Line under the Permit No.EP-129/2002 or under subsequent varied Permit, please refer to the EIAO and dedicated websites to the LMC Spur Line project for information, including the minutes of meeting and the associated papers of the Environmental Committee, the finalized plans and submissions for the LMC Spur Line.

2 AIR QUALITY MONITORING

2.1 Monitoring Requirement

- 2.1.1 According to the Updated EM&A Manual of the Project, 1 - hour Total Suspended Particulates shall be conducted at least 3 times every six days. A sampling frequency shall be strictly observed at all the monitoring stations.
- 2.1.2 Since November 2023, Aurecon Hong Kong Limited (Aurecon) has taken over the role of ET from Wellab Limited to carry out the air quality impact monitoring.

2.2 Monitoring Location

- 2.2.1 According to Section 5.5.7 of the Updated EM&A Manual, five air quality monitoring locations, namely CD1a, CD2a, CD3a, CD4a, CD5 are covered under the Project as shown in **Figure 2**. The locations of the representative air sensitive receivers (ASR) around the Project as identified in the ERR are shown in **Figure 2a**. **Table 2.1** describes the location of the air quality monitoring stations.

Table 2.1 Location for Air Quality Monitoring Locations

Monitoring Station ID	Description
CD1a	Village Houses along Ma Tso Lung Road
CD2a	Village Houses near Shek Tsai Leng
CD3a	Village Houses along Ho Sheung Heung Road
CD4a	Construction site office of Advance Site Formation and Engineering Infrastructure Works at Kwu Tung North and Fanling North New Development Areas – Contract No. ND/2019/01
CD5	Multi-Welfare Services Complex

Remark: Since Kwu Tung North Multi-Welfare Services Complex has been in service, air quality monitoring location of Dills Corner Garden (CD5a) was relocated back to this Complex (CD5) to carry out monitoring since December 2023, in accordance with the Section 5.5.7 of the approved Updated EM&A Manual of the Project.

2.3 Monitoring Equipment

- 2.3.1 Upon approval of the IEC, 1-hour TSP levels can be measured by direct reading method with using handheld dust meter, which is capable of producing comparable results as that by the high-volume sampling method, to indicate short event impacts.
- 2.3.2 The proposed use of handheld dust meter was submitted to the IEC and agreement was obtained from the IEC in accordance with Section 5.4.5 of the Updated EM&A Manual.
- 2.3.3 **Table 2.2** summarizes the equipment used in the air quality monitoring programme. Copies of calibration certificates are attached in **Appendix B**.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model	Serial Number
Portable Dust Meter – 1- hour TSP	SIBATA Digital Dust Indicator (Model: LD-5R)	0Z4545
		851816
		992820

2.3.4 In accordance with Section 5.6.3 and 5.6.4 of the Updated EM&A Manual, Meteorological information extracted from “Hong Kong Observatory - Ta Kwu Ling Weather Station” is used as the alternative method to obtain representative wind data. For Ta Kwu Ling Weather Station, it is located nearby the Project site and situated at approximately 15m above mean sea level. The station’s wind data monitoring equipment is set above the existing ground 10 meters in compliance with the general setting up requirements. Furthermore, this station also provides other meteorological information, such as humidity, rainfall, air pressure and temperature etc.

2.4 Monitoring Parameters, Frequency and Duration

2.4.1 The parameters, duration and frequency for air quality impact monitoring is given in **Table 2.3**. Monitoring stations CD1a, CD2a, CD3a, CD4a and CD5 were set up in accordance to the requirements for placement of equipment, as set out in Section 5.5.7 of the Updated EM&A manual of the Project.

Table 2.3 Air Quality Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1 – hour TSP	3 times for every 6 days

2.5 Monitoring Methodology and QA/QC Procedure

1-hour TSP Air Quality Monitoring

Instrumentation

2.5.1 The measuring procedures of the handheld dust meter are in accordance with the Manufacturer’s Instruction Manual as follows:

2.5.2 Handheld dust meter was deployed for the air quality monitoring location as shown in **Table 2.1**.

2.5.3 The measuring procedures and equipment set-up of the 1-hour dust meters were in accordance with the Manufacturer’s Instruction Manual as follow:

- Securely fix the meter at a level of 0.9m to 1.9m from ground, at a position with unrestricted airflow around the meter.
- Pull up the air sampling inlet cover.
- Change the Mode 0 to BG with once.
- Push Start/Stop switch once.
- Turn the knob to SENSLADJ and press it.
- Push Start/Stop switch once.
- Return the knob to the position MEASURE slowly.
- Push the timer set switch to set measuring time.
- Remove the cap and make a measurement.

2.6 Maintenance/Calibration

2.6.1 The following maintenance/calibration was required for the direct dust meters:

- Check and calibrate the dust meter by high volume sampler (HVS) to check the validity and accuracy of the results measured by direct reading method. Calibration of dust meter should be carried out every six months throughout all stages of the air quality monitoring. The calibration certificates of the monitoring equipment are presented in **Appendix B**.
- The correlation coefficient was checked to establish the correlation relationship between the handheld dust meter and HVS. The correlation factor was determined by comparing the results of HVS and handheld dust meter.
- Checking is made prior to air quality monitoring commencing to ensure all equipment is in good working condition with necessary power supply. Zero count test were conducted before and after each monitoring event.

- The calibration of environmental equipment used was cross checked by the IEC to confirm the precision of the application.

2.7 Environmental Quality Performance Limits

2.7.1 The baseline monitoring results formed the basis for determining the air quality criteria for the impact monitoring. The ET shall compare the impact monitoring results with air quality criteria set up for 1-hour TSP. Based on the baseline dust monitoring data and the derivation criteria specified above, the summary of baseline air quality monitoring results and Action/Limit Levels are presented in **Table 2.4**.

Table 2.4 Action and Limit Levels for 1-hour TSP

Monitoring Location	Range of Baseline Monitoring Results ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
CD1a	15 - 90	275	500
CD2a	14 - 104	279	
CD3a	17 - 122	279	
CD4a	19 - 173	281	
CD5	19 - 172	280	

2.8 Results and Observations

2.8.1 The Impact air quality monitoring result are summarized in **Table 2.5**. Detailed monitoring results and graphical presentations of air quality monitoring results are shown in **Appendix D**.

Table 2.5 Summary of 1 - hour TSP Monitoring Results

Monitoring Location	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level, ($\mu\text{g}/\text{m}^3$)
CD1a	20	13 - 26	275	500
CD2a	17	10 - 22	279	
CD3a	15	12 - 19	279	
CD4a	24	19 - 30	281	
CD5	33	28 - 39	280	

2.8.2 The schedule of air quality monitoring in the reporting month is shown in **Appendix C**.

2.8.3 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedances was recorded.

2.8.4 According to our field observations, the major dust sources identified at the designated air quality monitoring stations in the reporting month are shown in **Table 2.6**:

Table 2.6 Observation at Air Quality Monitoring Stations

Monitoring Station	Major Dust Sources
CD1a	No sources of dust emission was observed.
CD2a	No sources of dust emission was observed.
CD3a	No sources of dust emission was observed.
CD4a	1. Other construction site: Vehicle emission 2. Road traffic
CD5	1. Project construction site: Crane lorry, generator, dump truck, grab-mount lorry, excavator breaker, mobile crane, cement truck, roller, loaders, crawler crane, hand held breaker 2. Other construction site: Vehicle emission

2.8.5 The weather information during the reporting period is summarized in **Appendix F**.

2.9 Event and Action Plan

2.9.1 Should non-compliance of the air quality criteria occur, actions in accordance with the Action Plan in **Appendix G** shall be carried out.

3 NOISE MONITORING

3.1 Monitoring Requirements

- 3.1.1 In accordance with the Updated EM&A Manual, construction noise monitoring shall be conducted in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}) to monitor the construction noise arising from the construction activities.
- 3.1.2 The regular monitoring frequency for each monitoring station was on a weekly basis and one set of measurements between 0700 and 1900 hours on normal weekdays shall be conducted. **Table 3.1** shows the established Action and Limit Levels for the environmental monitoring works.

Table 3.1 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A)

3.2 Monitoring Location

- 3.2.1 According to Section 6.5.4 of the Updated EM&A Manual, one designated noise monitoring station for the Project is shown in **Figure 2**. The location of the representative noise sensitive receivers (NSR) around the Project as identified in the ERR are shown in **Figure 2a**. **Table 3.2** describes the location of the noise monitoring station.

Table 3.2 Location of Noise Monitoring Station

Monitoring Station(s)	Location(s)
CN1	Multi-Welfare Services Complex

Remark: Since Kwu Tung North Multi-Welfare Services Complex has been in service, noise monitoring location of Dills Corner Garden (CN1a) was relocated back to this Complex (CN1) to carry out monitoring since December 2023, in accordance with the Section 6.5.4 of the approved Updated EM&A Manual of the Project.

3.3 Monitoring Equipment

- 3.3.1 As referred to the requirements of the Technical Memorandum (TM) issued under the NCO, the sound level meters in compliance with the International Electro technical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications should be used for carrying out the noise monitoring. Immediately prior to and following each noise measurement, the accuracy of the sound level meter should be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The measurements may be accepted as valid only if the difference between calibration levels obtained before and after the noise measurement is less than 1.0 dB (94 dB \pm 0.1 dB).
- 3.3.2 **Table 3.3** summarizes the noise monitoring equipment used. Copies of calibration certificates are attached in **Appendix B**.

Table 3.3 Noise Monitoring Equipment

Equipment	Manufacturer	Model	Serial Number
Sound Level Meter	NTi Audio	XL2	A2A-13663-F0
Acoustical Calibrator	RION	NC-75	34724245

3.4 Monitoring Parameters, Frequency and Duration

3.4.1 The parameters and frequencies of impact noise monitoring is summarized in **Table 3.4**. Monitoring stations CN1 was set up in accordance with the requirements for placement of equipment, as set out in Section 6.5.4 of the Updated EM&A manual of the Project.

Table 3.4 Noise Quality Monitoring Parameters, Frequency and Duration

Parameters and duration	Frequency	Measurement
30-mins measurement at each monitoring station between 0700 and 1900 on normal weekdays. L_{eq} , L_{10} and L_{90} would be recorded.	Once per week	Façade

3.5 Monitoring Methodology and QA/QC Procedures

3.5.1 Noise measurement should be conducted as the following procedures:

- The sound level meter was set on a tripod at a point 1m from the exterior of the noise sensitive façade and at the position of 1.2m above the ground;
- For free field measurement, the meter was positioned away from any nearby reflective surfaces. Free field noise levels were adjusted with a correction of +3 dB(A);
- The battery condition was checked to ensure good functioning of the meter;
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - frequency weight: A
 - time weighting: Fast
 - measurement time: L_{eq} (30-mins) dB(A)
(As six consecutive L_{eq} (5-mins) during non-restricted hours (i.e., 0700-1900 hrs. on normal weekdays))
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re- calibration or repair of the equipment;
- During the monitoring period, the L_{eq} , L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet;
- Noise measurement was paused temporarily during periods of high intrusive noise (e.g., dog barking, helicopter noise) if possible and observation record during measurement period should be provided; and
- Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s. The wind speed should be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

3.6 Maintenance and Calibration

3.6.1 Maintenance and calibration procedures should also be carried out, including:

- The sound level meter and calibrator should be calibrated annually by a HOKLAS laboratory.
- The microphone head of the sound level meter and calibrator should be cleaned with a soft cloth at quarterly intervals.
- Immediately prior to and following each noise measurement, the accuracy of the sound level meter should be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements would be accepted as valid only if the calibration levels before and after the noise measurement agreed to within 1.0 dB.

- The calibration of environmental equipment used was cross checked by the IEC to confirm the precision of the application.

3.7 Results and Observations

3.7.1 The noise monitoring results are summarized in **Table 3.5**. Detailed monitoring results and graphical presentations of noise monitoring are shown in **Appendix E**.

Table 3.5 Summary of Noise Monitoring Results

Monitoring Station	Time Period	Noise Level Leq (30-mins) dB(A)	Limit Level dB(A)
CN1	Daytime (0700 – 1900)	71.2 – 72.2	75

3.7.2 The schedule of noise monitoring in reporting month is shown in **Appendix C**.

3.7.3 Construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded. The summary of exceedance record in reporting month is shown in **Appendix H**.

3.7.4 According to our field observations, the major noise sources identified at the designated noise monitoring station in the reporting month are shown in **Table 3.6**:

Table 3.6 Observation at Noise Monitoring Station

Monitoring Station	Major Noise Source
CN1	<ol style="list-style-type: none"> 1. Project construction site: Crane lorry, generator, dump truck, grab-mount lorry, excavator breaker, mobile crane truck, mobile crane, cement truck, roller, loaders, crawler crane, air compressor, hand held breaker, trailer dump, concrete pump 2. Other construction site: Generator, cement truck, tower crane, excavation, crane, crane truck and dump truck 3. Road traffic

3.7.5 The weather information for noise monitoring during reporting period is summarized in **Appendix F**.

3.8 Event and Action Plan

3.8.1 Should non-compliance of the noise monitoring criteria occur, actions in accordance with the Event and Action Plan in **Appendix G** shall be carried out.

4 LANDSCAPE AND VISUAL MONITORING

4.1 Monitoring Requirements

- 4.1.1 In accordance with Section 11.3 of the Updated EM&A Manual, site audit should 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.
- 4.1.2 Site inspections of the implementation of landscape and visual mitigation measures were conducted by ET at least once per month during the construction period. The observation and recommendations made during the audit sessions are summarized in **Table 5.1**. The implementation status is given in **Appendix I**.

5 ENVIRONMENTAL SITE INSPECTION

5.1 Site Audits

- 5.1.1 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, site inspections were carried out on 06, 13, 20 and 27 November 2024. The site inspection held on 20 November 2024 was a joint inspection with the MTR's Representative, IEC, the Contractor, and the ET during the reporting period.
- 5.1.2 No non-conformance was identified during the site inspections in the reporting month. Key observations during the site inspections in the reporting period are summarized in **Table 5.1**. The observation and rectification photos are attached in **Appendix M**.

Table 5.1 Observations and Recommendations of Site Audit

Date	Environmental Observation(s) / Recommendation(s)	Follow-up Status	Close-out Date / Status
2024 - 11 - 06	No Major environmental issue was observed during the site inspection.	NA	NA
2024 - 11 - 13	No Major environmental issue was observed during the site inspection.	NA	NA
2024 - 11 - 20	No Major environmental issue was observed during the site inspection.	NA	NA
2024 - 11 - 27	No Major environmental issue was observed during the site inspection.	NA	NA

5.2 Implementation Status of Environmental Mitigation Measures

- 5.2.1 In accordance with the Updated EM&A Manual, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is provided in **Appendix I**.

5.3 Solid and Liquid Waste Management Status

- 5.3.1 In accordance with the Updated EM&A Manual, waste management was audited during weekly site audit to ensure that the recommended good practices and other measures recommended in the EMIS of the Updated EM&A Manual (provided in **Appendix I**) are properly implemented by the Contractor. Waste management practice including waste handling, storage, transportation, and disposal were audited.
- 5.3.2 The Contractor is advised to minimize the wastes generated through recycling or reusing. All mitigation measures stipulated in the Updated EM&A Manual shall be properly implemented. The status of implementation of waste management and reduction measures are summarized in **Appendix I**.
- 5.3.3 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 and waste that cannot be reused or recycled and have to be disposed of at the designated landfill sites. The amount of wastes generated by the construction works of the Project during the reporting month is shown in **Appendix J**.

6 ENVIRONMENTAL NON-COMFORMANCE

6.1 Summary of Exceedances

6.1.1 No exceedance of Action or Limit Levels of air quality was recorded in the reporting period.

6.1.2 No exceedance of Action or Limit Levels of construction noise was recorded in the reporting period.

6.2 Summary of Environmental Non-Compliance

6.2.1 No environmental non-compliance was recorded in the reporting period.

6.3 Summary of Environmental Complaint

6.3.1 There was no environmental complaint received in the reporting month. The Cumulative Complaint Log since the commencement of the Project is presented in **Appendix L**.

6.4 Summary of Environmental Summons and Successful Prosecution

6.4.1 There was no successful environmental prosecution or notification of summons received since the Project commencement. The Cumulative Log for environmental summon and successful prosecution since the commencement of the Project is presented in **Appendix K**.

7 FUTURE KEY ISSUES

7.1 Construction Programme for the upcoming months

7.1.1 Major activities in the upcoming three months include:

Lower Platform:

Aboveground works

- Foundation and erection of tower cranes
- Construction of station structure

Station Tunnel Box:

Aboveground works

- Advance works for station permanent structure
 - i Concrete slab and screed removal
 - ii Waterproofing works
 - iii Construction of station structure

Underground works:

- Alteration and Additional works inside the tunnel box
 - i OTE precast removal/ dura steel installation
 - ii Concrete column removal
 - E&M works inside the tunnel box

7.2 Potential Environmental Impacts and Recommended Mitigation Measure in the Coming Month(s)

7.2.1 With reference to the site layout plan including the indication of coming three months construction site activities in **Appendix A**, potential environmental impacts arising from the above construction activities are mainly associated with construction dust, noise, water quality, waste management, landscape and visual. The foreseeable environmental impacts were taken into consideration of the planned mitigation measures in the coming months.

7.2.2 The major site activities, potential environmental and recommended mitigation measures for the coming three months are shown in **Table 7.1**.

7.3 Monitoring Schedule for the Next Month

7.3.1 The tentative environmental monitoring schedule for the next month is shown in **Appendix C**.

7.4 Construction Programme for the Next Month

7.4.1 A tentative construction programme is provided in **Appendix A**.

Table 7.1 Summary Table for Site Activities, Potential Environmental Impacts and Recommended Mitigation Measure in the Coming Months

Contract No.	Major Site Activities	Location	Potential Environmental Impact	Recommended Mitigation Measures
1601	I. Foundation and erection of tower crane	Lower platform (Above-ground)	<ul style="list-style-type: none"> ➤ Construction Dust impact ➤ Noise Impact (Construction Phase) ➤ Water Quality Impact (Construction Phase) ➤ Waste Management (Construction Waste) 	<p><u>Air Quality</u></p> <ul style="list-style-type: none"> ▪ Watering on exposed earth and dry haul road. ▪ Cover the stockpiles or dusty materials when not in use. ▪ Provide shelter with top and 3-sides for cement production activities. ▪ Any excavation or earthmoving operation shall spray with water immediately before, during and immediately after the operation so as to maintain the entire surface wet. ▪ Close the mechanical cover of the vehicles used for transporting dusty materials. ▪ Wheel washing was provided for every vehicle before leaving site. ▪ The construction plants regularly maintained to avoid the emissions of black smoke. ▪ Conduct air quality monitoring regularly. <p><u>Construction Noise</u></p> <ul style="list-style-type: none"> ▪ Mobile plant should be sited as far away from NSRs as possible and practicable. ▪ Quieter plant should be chosen as far as practicable. ▪ Vehicles and plants used on-site were checked regularly to ensure that vehicles and plants were operating normally. ▪ Vehicles were turned off when not in use. ▪ Conduct noise monitoring regularly. ▪ Provide temporary noise screens if necessary. ▪ Obtain Construction Noise Permit (CNP) for works to be carried out during restricted
	II. Construction of station structure		<ul style="list-style-type: none"> ➤ Construction Dust impact ➤ Noise Impact (Construction Phase) ➤ Water Quality Impact (Construction Phase) ➤ Waste Management (Construction Waste) 	
	III. Advance works for station permanent structure			
	1) Concrete slab and screed removal	Station Tunnel Box (Aboveground works)	<ul style="list-style-type: none"> ➤ Construction Dust impact ➤ Noise Impact (Construction Phase) ➤ Waste Management (Construction Waste) 	
	2) Waterproofing works		<ul style="list-style-type: none"> ➤ Noise Impact (Construction Phase) ➤ Waste Management (Construction Waste) 	

3) Construction of station structure		<ul style="list-style-type: none"> ➤ Construction Dust impact ➤ Noise Impact (Construction Phase) ➤ Water Quality Impact (Construction Phase) ➤ Waste Management (Construction Waste) 	<p>hours and follow the conditions stipulated in the CNP issued by the Noise Control Authority.</p> <p><u>Water Quality</u></p> <ul style="list-style-type: none"> ▪ Set up wastewater treatment system (AquaSed) on site. ▪ Maintain the drainage and wastewater treatment facilities. <p><u>Waste / Chemical Management</u></p>
IV. Alteration and Additional works inside the tunnel box			
1) OTE precast removal / dura steel installation	Station Tunnel Box (Underground works)	<ul style="list-style-type: none"> ➤ Noise Impact (Construction Phase) ➤ Waste Management (Construction Waste) 	<ul style="list-style-type: none"> ▪ Stockpiling area should be provided with covers and water spraying system to prevent materials from windblown or being washed away. ▪ Chemical cabinet available on site. ▪ Recycling bins, general bins and storage area should provide. ▪ Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling. ▪ Drip tray should be provided.
2) Concrete column removal		<ul style="list-style-type: none"> ➤ Noise Impact (Construction Phase) ➤ Water Quality Impact (Construction Phase) ➤ Waste Management (Construction Waste) 	
V. E&M works inside the tunnel box	Station Tunnel Box (Underground works)	<ul style="list-style-type: none"> ➤ Noise Impact (Construction Phase) ➤ Waste Management (Construction Waste) 	

8 CONCLUSION AND RECOMMENDATIONS

8.1 Conclusions

- 8.1.1 This report summarized the Monitoring Results and Audits findings of the EM&A Programme Under the EP of the Project during the reporting period from 1 November to 30 November 2024.
- 8.1.2 1-hour TSP impact monitoring was carried out in the reporting month. No Action or Limit Level exceedance at CD1a, CD2a, CD3a, CD4a and CD5 was recorded during the period.
- 8.1.3 Day time construction noise monitoring was carried out in the reporting month. No Action or Limit Level exceedance at CN1 was recorded during the period.
- 8.1.4 Environmental site inspections were carried out on 06, 13, 20 and 27 November 2024.
- 8.1.5 No environmental non-compliance was recorded in the reporting month.
- 8.1.6 No environmental complaint, notification of summons and successful prosecution was recorded in the reporting month.

8.2 Recommendations

- 8.2.1 According to the environmental audits performed in the reporting month, no major environmental deficiency was identified.

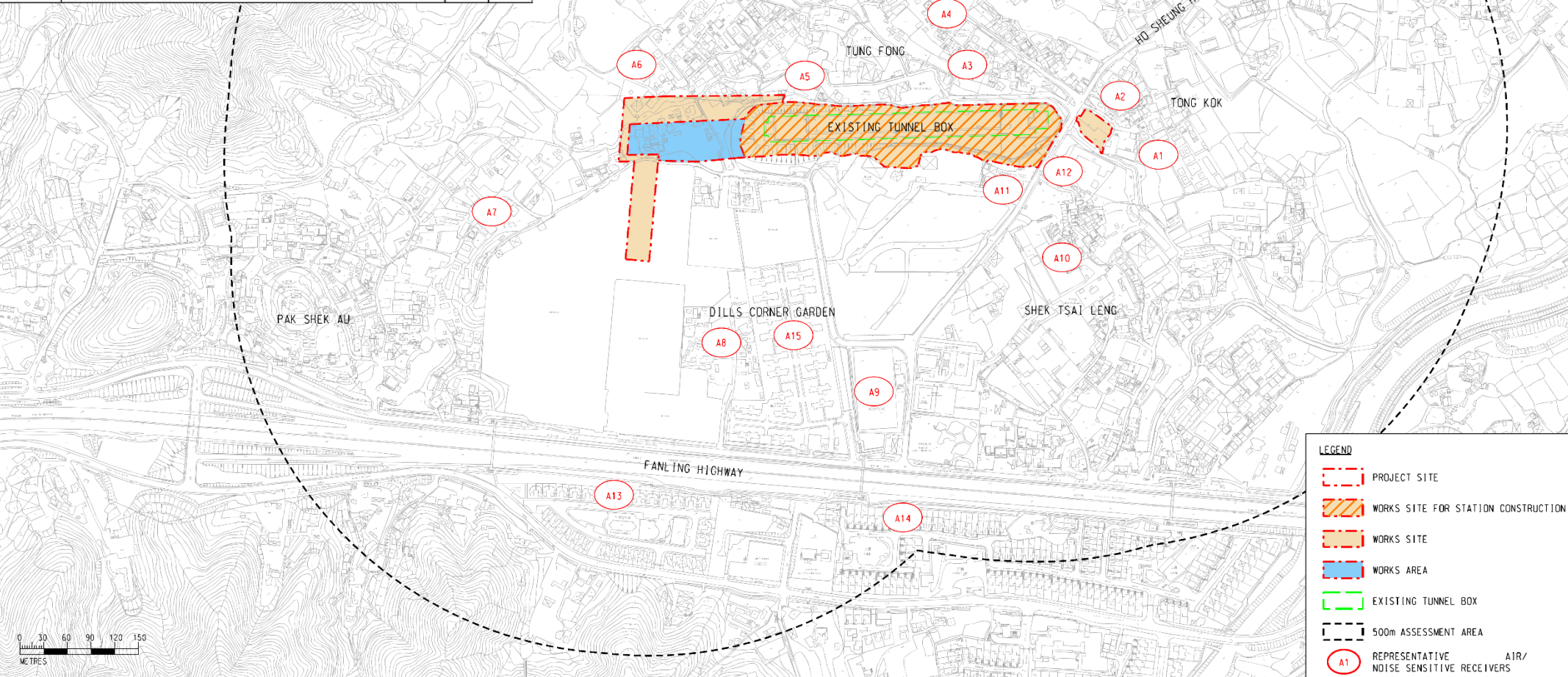
Figures 1 Project Location

Figures 2 Air and Noise Monitoring Locations

Figures 2a Location of representative Air and Noise Sensitive Receivers

Plot title: c:\pwworkspace\hntb\air\project\variation\variation\figure 2a-1\fig 2a-1_01.dwg
 File name: 210920210651-00_00001.dwg
 User: jason.chen
 Date: 27/10/2021 10:53:10
 Plot scale: 1:5000
 Plot date: 27/10/2021 10:53:10
 Plot by: jason.chen
 Plot title: Variation of Environmental Permit (VEP) of Sheung Shui to Lok Ma Chau Spur Line
 Location of Representative Air and Noise Sensitive Receivers
 Scale: 1:5000 (A3)
 Drawing No.: FIGURE 2a-1
 Rev: B

ID	Description	ASR	NSR
A1	Village Houses along Ho Sheung Heung Road	✓	✓
A2	Village Houses along Ho Sheung Heung Road	✓	✓
A3	Village Houses along Ma Tso Lung Road	✓	✓
A4	Temporary Structures with residential use along Ma Tso Lung Road	✓	✓
A5	Village Houses near Tung Fong	✓	✓
A6	Temporary Structures with residential use near Tung Fong	✓	✓
A7	Temporary Structures with residential use near Pak Shek Au	✓	✓
A8	Temporary Structures with residential use near Dills Corner Garden	✓	✓
A9	Kwu Tung Grass Soccer Pitch	✓	✓
A10	Village House near Shek Tsai Leng	✓	✓
A11	Sheung Shui Pui Yau Kindergarten	✓	✓
A12	Village Houses along Ho Sheung Heung Road	✓	✓
A13	Europa Garden Phase 1	✓	✓
A14	Valais Phase 1	✓	✓
A15	Dills Comer Garden	✓	✓



LEGEND

- PROJECT SITE
- WORKS SITE FOR STATION CONSTRUCTION
- WORKS SITE
- WORKS AREA
- EXISTING TUNNEL BOX
- 500m ASSESSMENT AREA
- A1 REPRESENTATIVE AIR/NOISE SENSITIVE RECEIVERS

REV	DESCRIPTION	BY	DATE	APPROVED

REV	DESCRIPTION	BY	DATE	APPROVED
B	SECOND ISSUE	BS	10/21	FC
A	FIRST ISSUE	BS	09/21	FC

DRAWN	BS
DESIGNED	BS
CHECKED	JC
APPROVED	FC
DATE	27/10/21

MTR

ARUP

Supported by: Arcadis Hong Kong Ltd.

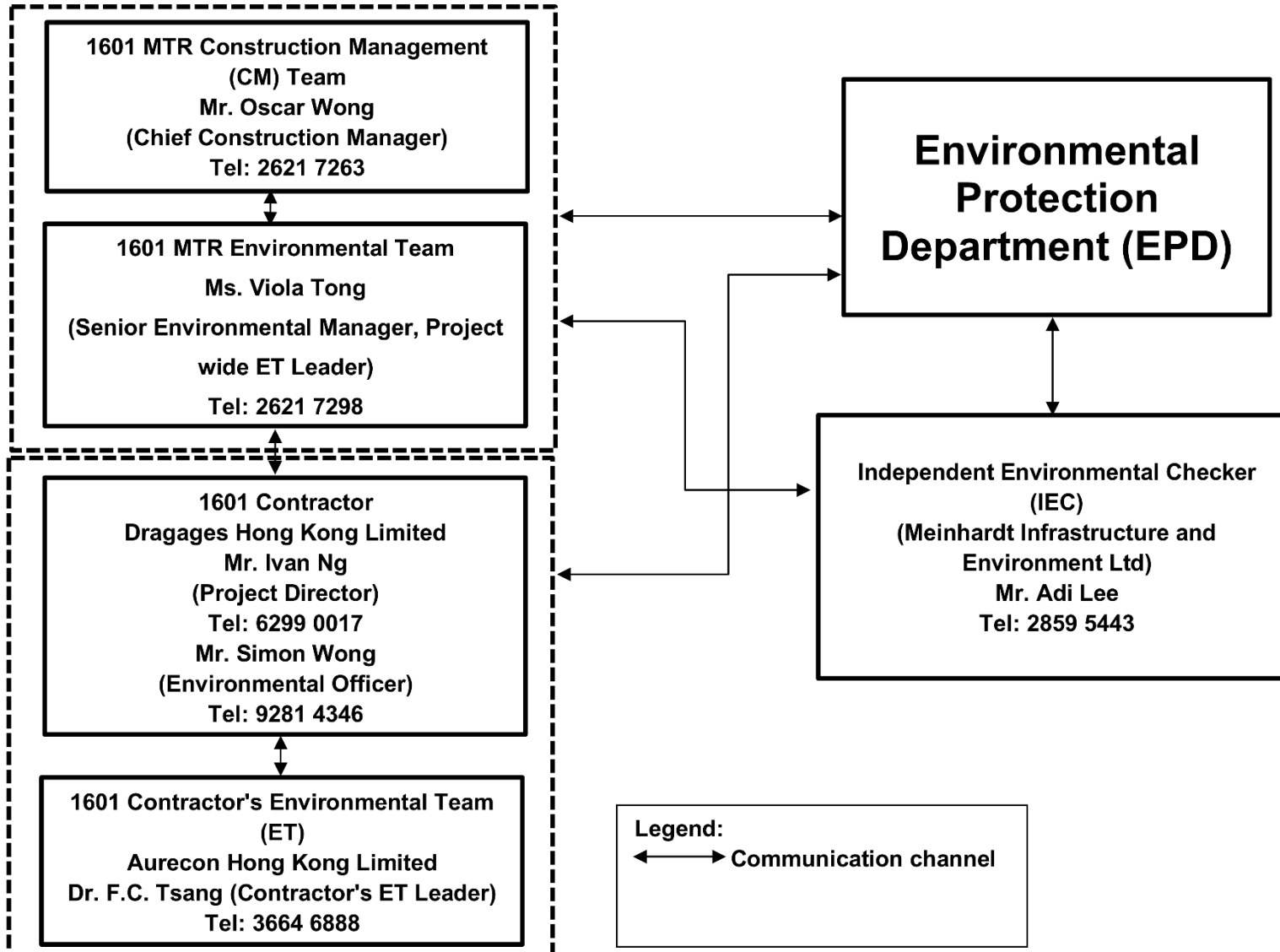
CADD REF: Figure 2a-1 - Locations of Representative Existing Air and Noise Sensitive Receivers

TITLE: VARIATION OF ENVIRONMENTAL PERMIT (VEP) OF SHEUNG SHUI TO LOK MA CHAU SPUR LINE
 LOCATION OF REPRESENTATIVE AIR AND NOISE SENSITIVE RECEIVERS

SCALE: 1 : 5000 (A3) DRAWING NO.: FIGURE 2a-1 REV: B

Figure 3 Organization Structure

MTR



Legend:
 ← → Communication channel

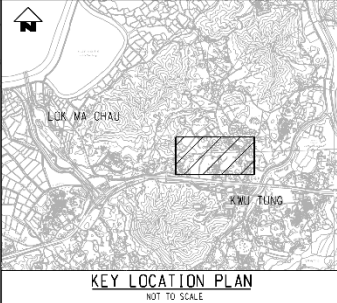
Appendix A Construction Programme

3-Month Rolling Programme for Major Works (Tentative)

Item	Activity Description	2024		2025	
		Nov	Dec	Jan	Feb
1	Upper Platform, Lower Platform & W4 Area				
	Aboveground works				
	Foundation and erection of tower crane				
	Advance works for station permanent structure				
	Construction of station structure				
2	Existing Facility Modification (Platform & Track Level)	2024		2025	
	Underground works	Nov	Dec	Jan	Feb
	- Alternation and Additional works inside the tunnel box				
	- Track level wall & slab construction				
	- Coring for fire hydrant pipe installation				
	- OTE precast removal / dura steel installation				
	- Concrete column removal				
- E&M works inside the tunnel box					

LEGEND:

	SCHEME BOUNDARY OF THE PROJECT
	EXISTING LOK MA CHAU SPUR LINE
	EXISTING RAILWAY FACILITY
	STATION FOOTPRINT
	ABOVE GROUND STRUCTURE
	WORKS SITE / WORKS AREA



Upper Platform
(No construction works)

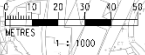
Station Tunnel Box:
Aboveground works
- Advance works for station permanent structure
- Construction of station structure

Underground works
- Alteration and Additional works inside the tunnel
- Track level wall and slab construction
- Coring for fire hydrant pipe
- OTE precast removal / dura steel installation
- E&M works inside the tunnel box



W4 Area
(No construction works)

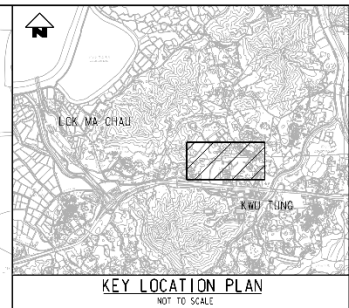
Lower Platform:
Aboveground works
Foundation and erection of tower cranes



DRAWN: WM DESIGNED: KP CHECKED: HKS APPROVED: CYH DATE: 18/OCT/2022 <small>FOR BEST PRACTICE, ALL DIMENSIONS SHALL BE GIVEN IN METRES. ALL DIMENSIONS SHALL BE GIVEN IN METRES. ALL DIMENSIONS SHALL BE GIVEN IN METRES. ALL DIMENSIONS SHALL BE GIVEN IN METRES.</small>						TITLE RAILWAY STATION AT KWU TUNG PROJECT LAYOUT PLAN Current Construction activities (Nov 2024)	
ORIGINATOR: ARUP Supported by: ARCADIS C1601-B-KTU-OAP-A11-051A.dgn				SCALE: 1 : 1000 (A1)		DRAWING NO.: C1601/B/KTU/OAP/A11/051	
SUBMISSION OF PROJECT LAYOUT PLAN				REV: 03/20/2024		REV: A	

LEGEND:

- SCHEME BOUNDARY OF THE PROJECT
- EXISTING LOK MA CHAU SPIUR LINE
- EXISTING RAILWAY FACILITY
- STATION FOOTPRINT
- ABOVE-GROUND STRUCTURE
- WORKS SITE / WORKS AREA



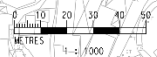
Upper Platform
Above-ground Works
No major construction works

Lower Platform:
Aboveground Works
- Foundation and erection of tower crane
- Construction of station structure

W4 Area
No planned construction works

Station Tunnel Box:
Aboveground works
Advance works for station permanent structure
- Concrete slab and screed removal
- Waterproofing works
Construction of station structure

Underground works
Alternation and Additional works inside the tunnel box
- OTE precast removal / dura steel installation
- Concrete column removal
E&M works inside the tunnel box



						DRAWN: WM DESIGNED: KP CHECKED: HKS APPROVED: CYH DATE: 18/OCT/2022		TITLE RAILWAY LAYOUT PLAN AT KWU TUNG Project Layout Plan Major Construction Activities (Dec 2024 - Feb 2025)				
SUBMISSION OF PROJECT LAYOUT PLAN							Supported by: ARCADIS	SCALE: 1 : 1000 (A1) DRAWING NO.: C1601/B/KTU/OAP/A11/051				
REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED	CADD REF. C1601-B-KTU-OAP-A11-051A.dgn	REV	A

Appendix B Calibration Certificates of Monitoring Equipment

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

Information of Calibrated Equipment

Verification Test Date:	13-Sep-24	to	14-Sep-24	Next Verification Test Date:	13-Sep-25
Unit-under-Test- Model No.:	Sibata LD-5R				
Unit-under-Test Serial No.:	0Z4545				
Our Report Reference No.:	RPT-24-HVS-0081				
Calibration Location:	Man Cheong Building				

Standard Equipment Information

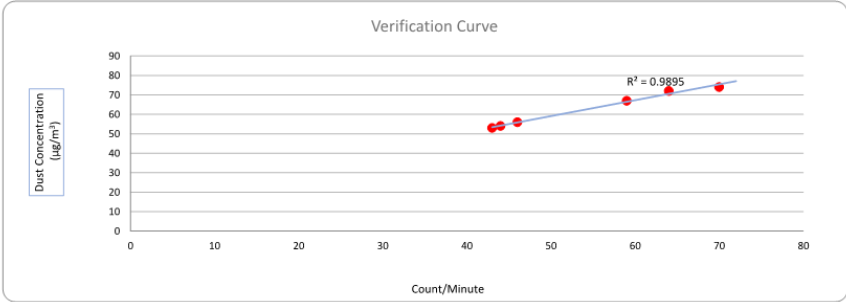
Verification Equipment Type:	Tisch TSP HVS	Tisch HVS Calibrator
Standard Equipment Model No.:	TE-5170X	TE-5025A
Equipment serial no.:	1050	3465
Last Calibration Date:	13-Sep-24	15-Jan-24
Next Calibration Date:	13-Sep-25	15-Jan-25


Equipment Verification Result

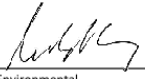
Verification Test No.	Date	Duration			Results from Calibrated Equipment		Results from Standard Equipment
		Start-time	End-time	Elapsed Time (in min)	Total Counts	Counts/ Minute x-axis	Dust Concentration ($\mu\text{g}/\text{m}^3$) y-axis
1	13/09/2024	8300.34	8303.34	180.00	15648	43	53
2	13/09/2024	8303.34	8306.34	180.00	14993	59	67
3	13/09/2024	8306.34	8309.34	180.00	8635	64	72
4	14/09/2024	8309.34	8312.34	180.00	10501	70	74
5	14/09/2024	8312.34	8315.34	180.00	24622	46	56
6	14/09/2024	8315.34	8318.34	180.00	9145	44	54

Linear Regression of y on x

Slope, K factor:	0.8156	Intercept:	18.3507	*Correlation Coefficient, R:	0.9947
Verification Test Result:	Strong Correlation, Results were accepted.				<small>* If the Correlation Coefficient, R is <0.5. Checking and Re-verification are required.</small>



Operated By: Andy Li  Date: 15-09-2024
 Project Technician, Environmental

Checked By: Tandy Tse  Date: 15-09-2024
 Senior Consultant, Environmental

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

Information of Calibrated Equipment

Verification Test Date:	13-Sep-24	to	14-Sep-24	Next Verification Test Date:	13-Sep-25
Unit-under-Test- Model No.:	Sibata LD-5R				
Unit-under-Test Serial No.:	851816				
Our Report Reference No.:	RPT-24-HVS-0082				
Calibration Location:	Man Cheong Building				

Standard Equipment Information

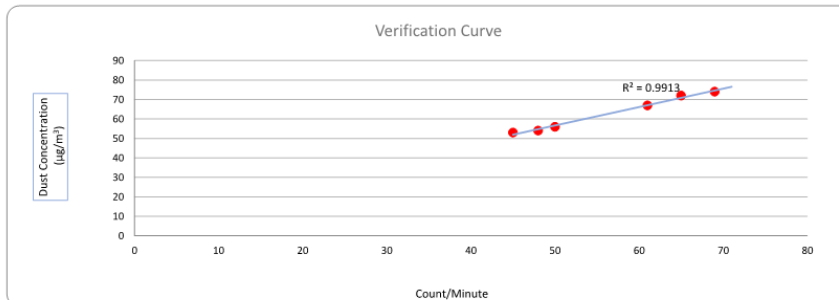
Verification Equipment Type:	Tisch TSP HVS	Tisch HVS Calibrator
Standard Equipment Model No.:	TE-5170X	TE-5028A
Equipment serial no.:	1050	3465
Last Calibration Date:	13-Sep-24	15-Jan-24
Next Calibration Date:	13-Sep-25	15-Jan-25

Equipment Verification Result

Verification Test No.	Date	Duration			Results from Calibrated Equipment		Results from Standard Equipment
		Start-time	End-time	Elapsed Time (in min)	Total Counts	Counts/ Minute x-axis	Dust Concentration (µg/m ³) y-axis
1	13/09/2024	8300.34	8303.34	180.00	8100	45	53
2	13/09/2024	8303.34	8306.34	180.00	10980	61	67
3	13/09/2024	8306.34	8309.34	180.00	11700	65	72
4	14/09/2024	8309.34	8312.34	180.00	12420	69	74
5	14/09/2024	8312.34	8315.34	180.00	9000	50	56
6	14/09/2024	8315.34	8318.34	180.00	8640	48	54

Linear Regression of y on x

Slope, K factor:	0.9462	Intercept:	9.3661	*Correlation Coefficient, R:	0.9956
Verification Test Result:	Strong Correlation, Results were accepted.				* If the Correlation Coefficient, R is <0.5. Checking and Re-verification are required.



Operated By: Andy Li
Project Technician, Environmental

Date: 15-09-2024

Checked By: Tandy Tse
Senior Consultant, Environmental

Date: 15-09-2024

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

Information of Calibrated Equipment

Verification Test Date:	13-Sep-24	to	14-Sep-24	Next Verification Test Date:	13-Sep-25
Unit-under-Test- Model No.:	Sibata LD-5R				
Unit-under-Test Serial No.:	992820				
Our Report Reference No.:	RPT-24-HVS-0041				
Calibration Location:	Man Cheong Building				

Standard Equipment Information

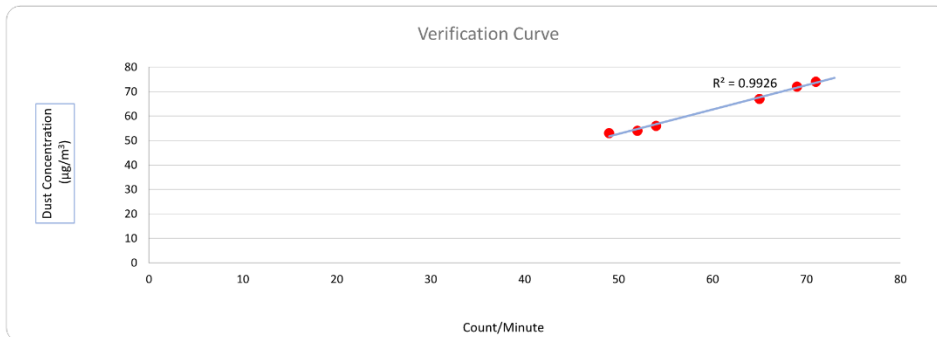
Verification Equipment Type:	Tisch TSP HVS	Tisch HVS Calibrator
Standard Equipment Model No.:	TE-5170X	TE-5025A
Equipment serial no.:	1050	3465
Last Calibration Date:	13-Sep-24	15-Jan-24
Next Calibration Date:	13-Sep-25	15-Jan-25


Equipment Verification Result


Verification Test No.	Date	Duration			Results from Calibrated Equipment		Results from Standard Equipment
		Start-time	End-time	Elapsed Time (in min)	Total Counts	Counts/ Minute x-axis	Dust Concentration ($\mu\text{g}/\text{m}^3$) y-axis
1	13/09/2024	8300.34	8303.34	180.00	8820	49	53
2	13/09/2024	8303.34	8306.34	180.00	11700	65	67
3	13/09/2024	8306.34	8309.34	180.00	12420	69	72
4	14/09/2024	8309.34	8312.34	180.00	12780	71	74
5	14/09/2024	8312.34	8315.34	180.00	9720	54	56
6	14/09/2024	8315.34	8318.34	180.00	9360	52	54

Linear Regression of y on x

Slope, K factor:	33.1857	Intercept:	11.2093	*Correlation Coefficient, R:	0.9963
Verification Test Result: <u>Strong Correlation, Results were accepted.</u>			* If the Correlation Coefficient, R is <0.5. Checking and Re-verification are required.		



Operated By: Andy Li  Date: 15-09-2024
Project Technician, Environmental

Checked By: Tandy Tse  Date: 15-09-2024
Senior Consultant, Environmental

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Man Cheong Building	Site ID:	W-A6	Date:	13-Sep-2024
Serial No.:	1050	Model:	TE-5170X	Operator:	Andy Li

Ambient Condition

Actual Pressure during Calibration (P_a) (mm Hg):	753.9	Actual Temperature during Calibration (T_a) (deg K):	303.6
-------------------------------------------------------	-------	----------------------------------------------------------	-------

Calibration Orifice

Model:	TE-5025A	Slope (m_c):	2.06920
Serial No.:	3465	Intercept (b_c):	-0.02547
Calibration Due Date:	15-Jan-25	Corr. Coeff:	0.99999

Calibration Data

Plate or Test #	ΔH_2O (in)	Qa, X-Axis (m ³ /min)	I, CFM (chart)	IC, Y-Axis (corrected)
18	11.20	1.608	59.0	58.22
13	8.00	1.361	54.0	53.29
10	5.40	1.121	50.0	49.34
7	3.20	0.865	43.0	42.43
5	2.00	0.687	40.0	39.47

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

$m =$ 20.6929 $b =$ 25.2008 Corr. Coeff = 0.9969

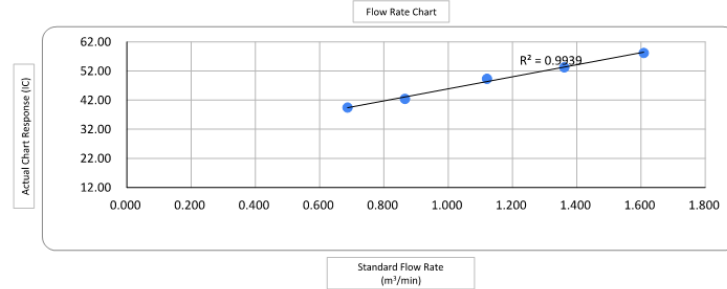
$$Qa = 1/m_c * [\text{Sqrt}(\Delta H_2O * (P_a/P_{std}) * (T_{std}/T_a)) - b_c]$$

$$IC = 1 * (\text{Sqrt}(P_a/P_{std}) * (T_{std}/T_a))$$

Calculations

Qa = actual flow rate
 IC = corrected chart response
 I = actual chart response
 m_c = calibrator slope
 b_c = calibrator intercept

m = sampler slope
 b = sampler intercept
 T_{std} = 298 deg K
 P_{std} = 760 mm Hg
 T_a = actual temperature during calibration (deg K)
 P_a = actual pressure during calibration (mm Hg)



Checked by: Tandy Tse Senior Consultant, Environmental

Date: 13-Sep-2024

Certificate of Calibration

Calibration Certification Information			
Cal. Date: January 15, 2024	Rootsmeter S/N: 438320	Ta: 294	°K
Operator: Jim Tisch		Pa: 755.9	mm Hg
Calibration Model #: TE-5025A	Calibrator S/N: 3465		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4350	3.3	2.00
2	3	4	1	1.0180	6.4	4.00
3	5	6	1	0.9090	8.0	5.00
4	7	8	1	0.8670	8.9	5.50
5	9	10	1	0.7150	12.9	8.00

Data Tabulation						
Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H \left(\frac{Pa}{Pstd} \right) \left(\frac{Tstd}{Ta} \right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H (Ta/Pa)}$ (y-axis)	
1.0037	0.6995	1.4200	0.9956	0.6938	0.8820	
0.9996	0.9819	2.0081	0.9915	0.9740	1.2473	
0.9975	1.0973	2.2452	0.9894	1.0885	1.3945	
0.9963	1.1491	2.3547	0.9882	1.1398	1.4626	
0.9909	1.3859	2.8399	0.9829	1.3747	1.7639	
QSTD	m= 2.06920		QA	m= 1.29570		
	b= -0.02547			b= -0.01582		
	r= 0.99999			r= 0.99999		

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

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

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

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

Certificate of Calibration

for

Description: *Sound Level Meter*
Manufacturer: *NTi Audio*
Type No.: *XL2 (Serial No.: A2A-13663-F0)*
Microphone: *ACO 7052 (Serial No.: 84413)*
Preamplifier: *NTi Audio M2211 MA220 (Serial No.: 7014)*

Submitted by:

Customer: *Acuity Sustainability Consulting Limited*
Address: *Unit E, 12/F, Ford Glory Plaza,
Nos. 37-39 Wing Hong Street,
Cheung Sha Wan, Kowloon, Hong Kong*

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

- Within (31.5Hz – 4kHz)
 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: 25 January 2024

Date of calibration: 29 January 2024

Date of NEXT calibration: 28 January 2025

Calibrated by: _____
Calibration Technician

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

Date of issue: 29 January 2024

Certificate No.: APJ23-132-CC001

Page 1 of 4

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: 20.6°C
 Air Pressure: 1006 hPa
 Relative Humidity: 48.5%

3. Calibration Equipment:

	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV220061	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

Certificate No.: APJ23-132-CC001

Page 2 of 4

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



Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dB	SPL	Fast	94	31.5	94.1	±2.0
					63	94.1	±1.5
					125	94.1	±1.5
					250	94.1	±1.4
					500	94.1	±1.4
					1000	94.1	Ref
					2000	94.5	±1.6
4000	95.1	±1.6					

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBA	SPL	Fast	94	31.5	54.8	-39.4±2.0
					63	67.9	-26.2±1.5
					125	78.0	-16.1±1.5
					250	85.4	-8.6±1.4
					500	90.9	-3.2±1.4
					1000	94.1	Ref
					2000	95.7	+1.2±1.6
4000	96.2	+1.0±1.6					

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB	
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz			
30-130	dBC	SPL	Fast	94	31.5	91.1	-3.0±2.0
					63	93.3	-0.8±1.5
					125	93.9	-0.2±1.5
					250	94.1	-0.0±1.4
					500	94.2	-0.0±1.4
					1000	94.1	Ref
					2000	94.3	-0.2±1.6
4000	94.4	-0.8±1.6					

Certificate No.: APJ23-132-CC001

Page 3 of 4

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



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	± 0.10
	4000 Hz	± 0.15
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.

Certificate No.: APJ23-132-CC001

Page 4 of 4

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



Certificate of Calibration

for

Description: *Sound Level Calibrator*
Manufacturer: *RION*
Type No.: *NC-75*
Serial No.: *34724245*

Submitted by:

Customer: *Aurecon Hong Kong Limited*
Address: *Unit 1608, 16/F, Tower B, Manulife Financial Centre,
223-231 Wai Yip Street, Kwun Tong,
Kowloon, Hong Kong*

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

- Within
 Outside

the allowable tolerance.

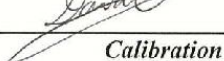
The test equipments used for calibration are traceable to National Standards via:

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory

Date of receipt: 22 July 2024

Date of calibration: 24 July 2024

Date of NEXT calibration: 23 July 2025

Calibrated by:  *Calibration Technician*

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

Date of issue: 24 July 2024



Certificate No.: APJ23-154-CC003

Page 1 of 2

1. Calibration Precautions:

- 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 Specifications:

Calibration check

3. Calibration Conditions:

Air Temperature: 23.4 °C
Air Pressure: 1005 hPa
Relative Humidity: 56.7 %

4. Calibration Equipment:

Test Equipment	Type	Serial No.	Calibration Report Number	Traceable to
Multifunction Calibrator	B&K 4226	2288467	AV240081	HOKLAS
Sound Level Meter	RION NA-28	30721812	AV230128	HOKLAS

5. Calibration Results

5.1 Sound Pressure Level

Nominal value dB	Accept lower level dB	Accept upper level dB	Measured value dB
94.0	93.6	94.4	94.0

Note:

The values given in this certification only related to the values measured at the time of the calibration.



Certificate No.: APJ23-154-CC003

Page 2 of 2

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

Appendix C Environmental Monitoring Schedules

**Contract 1601 - Kwu Tung Station on East Rail Line
Impact Air Quality and Noise Monitoring Schedule**

Nov-24						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
		1-hour TSP monitoring for CD1a, CD2a, CD3a, CD4a & CD5 Daytime Noise monitoring for CN1				
10	11	12	13	14	15	16
	1-hour TSP monitoring for CD1a, CD2a, CD3a, CD4a & CD5 Daytime Noise monitoring for CN1					1-hour TSP monitoring for CD1a, CD2a, CD3a, CD4a & CD5
17	18	19	20	21	22	23
					1-hour TSP monitoring for CD1a, CD2a, CD3a, CD4a & CD5 Daytime Noise monitoring for CN1	
24	25	26	27	28	29	30
				1-hour TSP monitoring for CD1a, CD2a, CD3a, CD4a & CD5 Daytime Noise monitoring for CN1		

Remarks:
1. Daytime Noise Monitoring (07:00-1900)

**Contract 1601 - Kwu Tung Station on East Rail Line
Tentative Impact Air Quality and Noise Monitoring Schedule**

Dec-24

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
			1-hour TSP monitoring for CD1a, CD2a, CD3a, CD4a & CD5 Daytime Noise monitoring for CN1			
8	9	10	11	12	13	14
		1-hour TSP monitoring for CD1a, CD2a, CD3a, CD4a & CD5 Daytime Noise monitoring for CN1				
15	16	17	18	19	20	21
	1-hour TSP monitoring for CD1a, CD2a, CD3a, CD4a & CD5 Daytime Noise monitoring for CN1					1-hour TSP monitoring for CD1a, CD2a, CD3a, CD4a & CD5
22	23	24	25	26	27	28
					1-hour TSP monitoring for CD1a, CD2a, CD3a, CD4a & CD5 Daytime Noise monitoring for CN1	
29	30	31				

Remarks:
 1. Daytime Noise Monitoring (07:00-1900)
 Note:
 The schedule may be changed due to unforeseen circumstances (adverse weather, etc)

Appendix D Air Quality Monitoring Results and Graphic Presentation

Location CD1a - Village Houses along Ma Tso Lung Road							
Date	Start Time	Weather	1 st Hour (µg/m ³)	2 nd Hour (µg/m ³)	3 rd Hour (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)
2024-11-05	13:07	Fine	22	26	19	275	500
2024-11-11	13:03	Fine	18	14	13		
2024-11-16	13:06	Fine	22	20	17		
2024-11-22	13:10	Sunny	22	19	24		
2024-11-28	13:08	Fine	24	26	21		
Average			20				
Range			13 - 26				

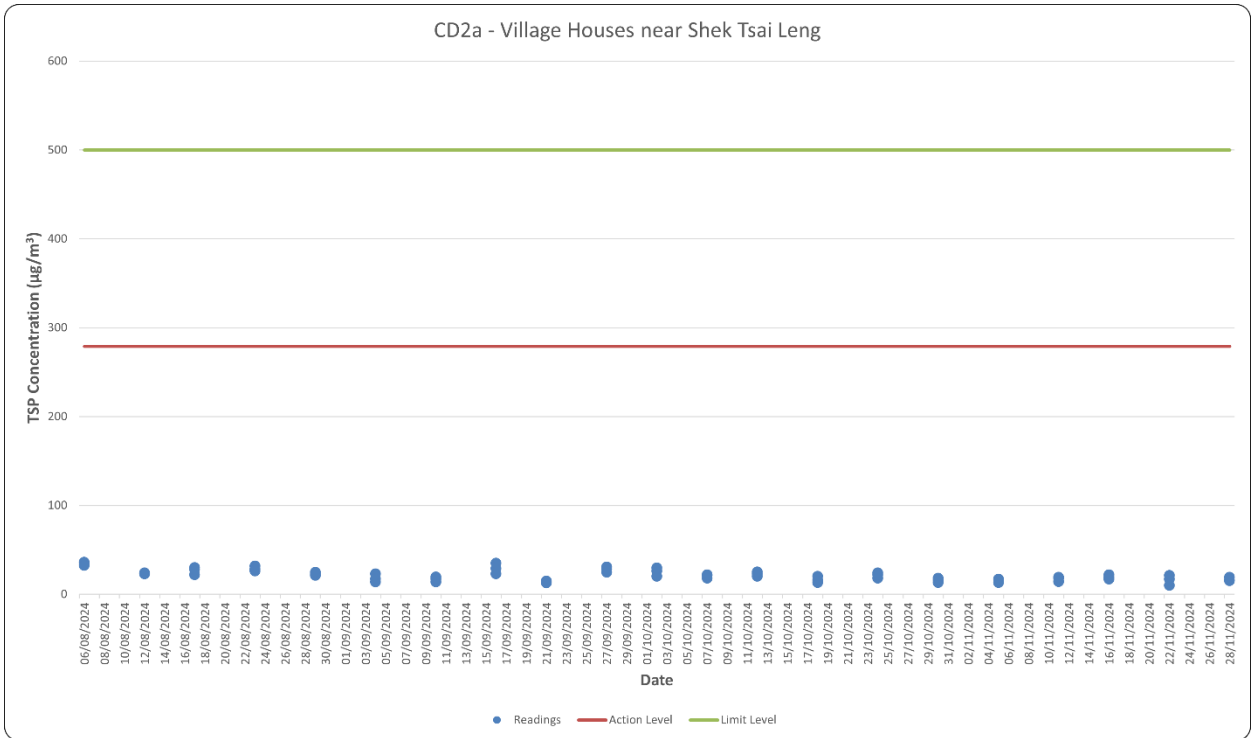
Location CD2a - Village Houses near Shek Tsai Leng							
Date	Start Time	Weather	1 st Hour (µg/m ³)	2 nd Hour (µg/m ³)	3 rd Hour (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)
2024-11-05	13:17	Fine	17	13	16	279	500
2024-11-11	13:13	Fine	14	18	19		
2024-11-16	13:14	Fine	19	22	17		
2024-11-22	13:20	Sunny	17	21	10		
2024-11-28	13:15	Fine	19	16	15		
Average			17				
Range			10 - 22				

Location CD3a - Village Houses along Ho Sheung Heung Road							
Date	Start Time	Weather	1 st Hour (µg/m ³)	2 nd Hour (µg/m ³)	3 rd Hour (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)
2024-11-05	8:33	Fine	16	12	13	279	500
2024-11-11	8:31	Fine	18	15	16		
2024-11-16	8:31	Fine	12	17	15		
2024-11-22	8:26	Sunny	13	19	12		
2024-11-28	8:31	Fine	16	19	15		
Average			15				
Range			12 - 19				

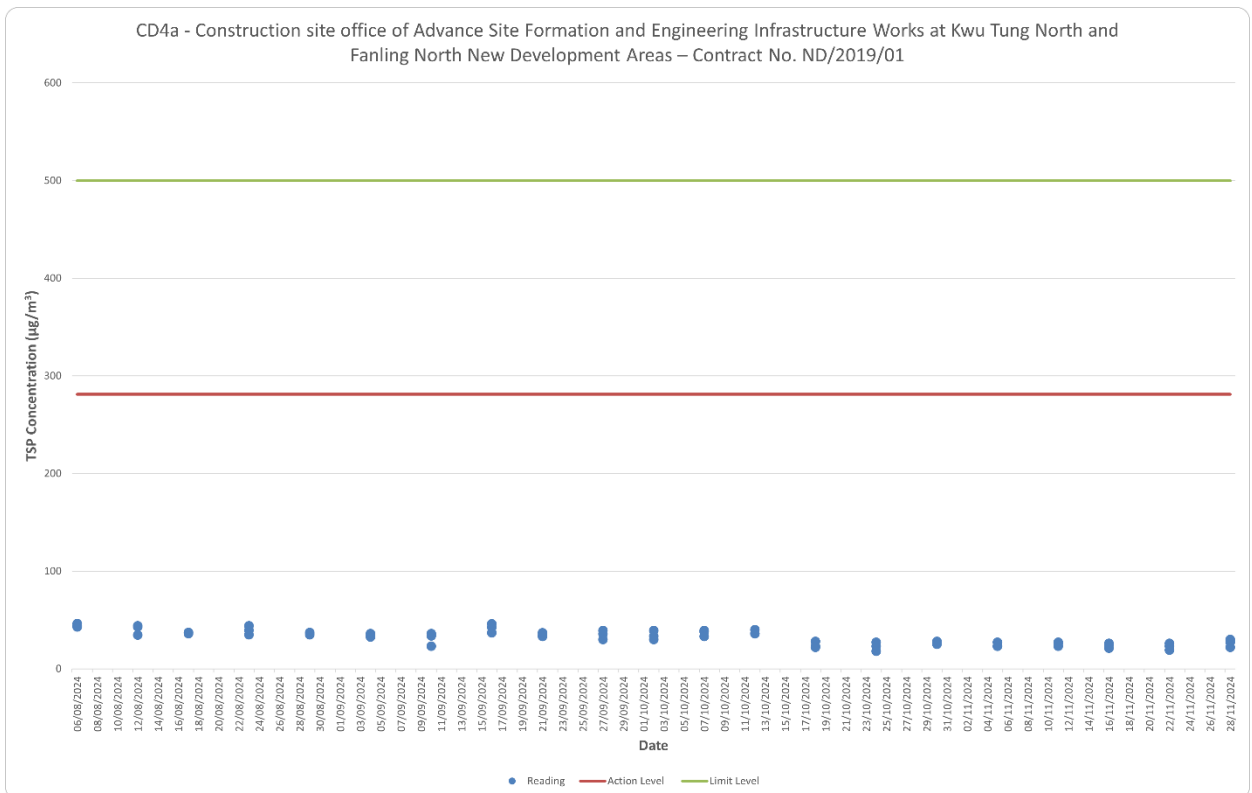
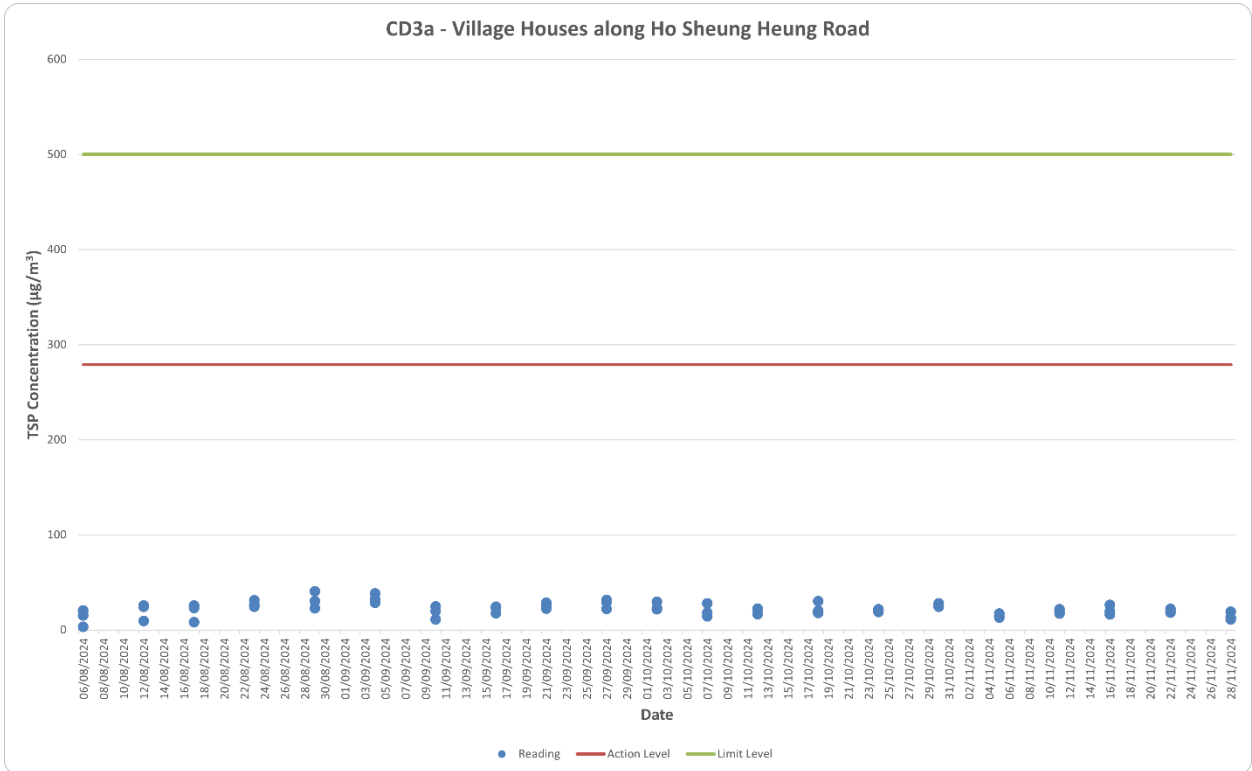
Location CD4a - Construction site office of Advance Site Formation and Engineering Infrastructure Works at Kwu Tung North and Fanling North New Development Areas – Contract No. ND/2019/01							
Date	Start Time	Weather	1 st Hour (µg/m ³)	2 nd Hour (µg/m ³)	3 rd Hour (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)
2024-11-05	8:42	Fine	23	27	23	281	500
2024-11-11	8:45	Fine	26	27	23		
2024-11-16	8:44	Fine	21	26	24		
2024-11-22	8:40	Sunny	19	26	23		
2024-11-28	8:45	Fine	27	22	30		
Average			24				
Range			19 - 30				

Location CD5 - Multi-Welfare Services Complex							
Date	Start Time	Weather	1 st Hour ($\mu\text{g}/\text{m}^3$)	2 nd Hour ($\mu\text{g}/\text{m}^3$)	3 rd Hour ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
2024-11-05	8:55	Fine	31	28	30	280	500
2024-11-11	8:53	Fine	36	32	30		
2024-11-16	8:56	Fine	32	35	31		
2024-11-22	8:55	Sunny	38	37	35		
2024-11-28	8:56	Fine	36	39	30		
Average			33				
Range			28 - 39				

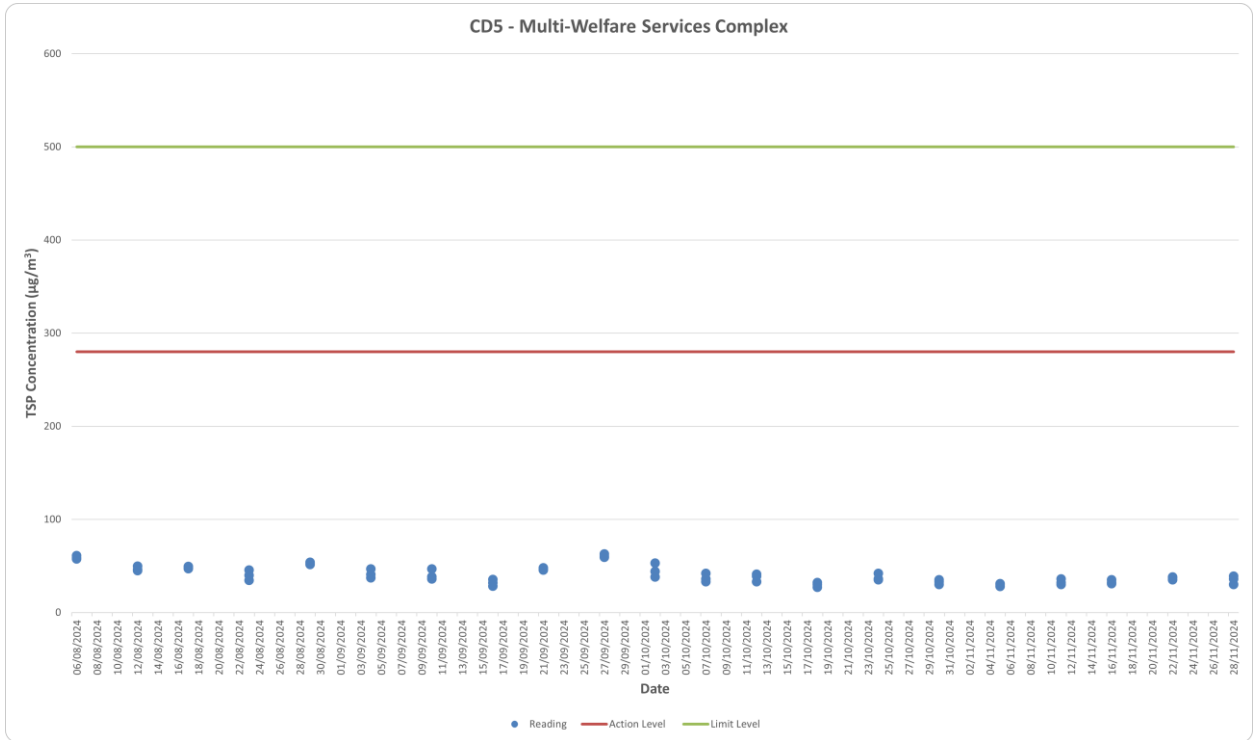
1-hour TSP Concentration Level



1-hour TSP Concentration Level



1-hour TSP Concentration Level



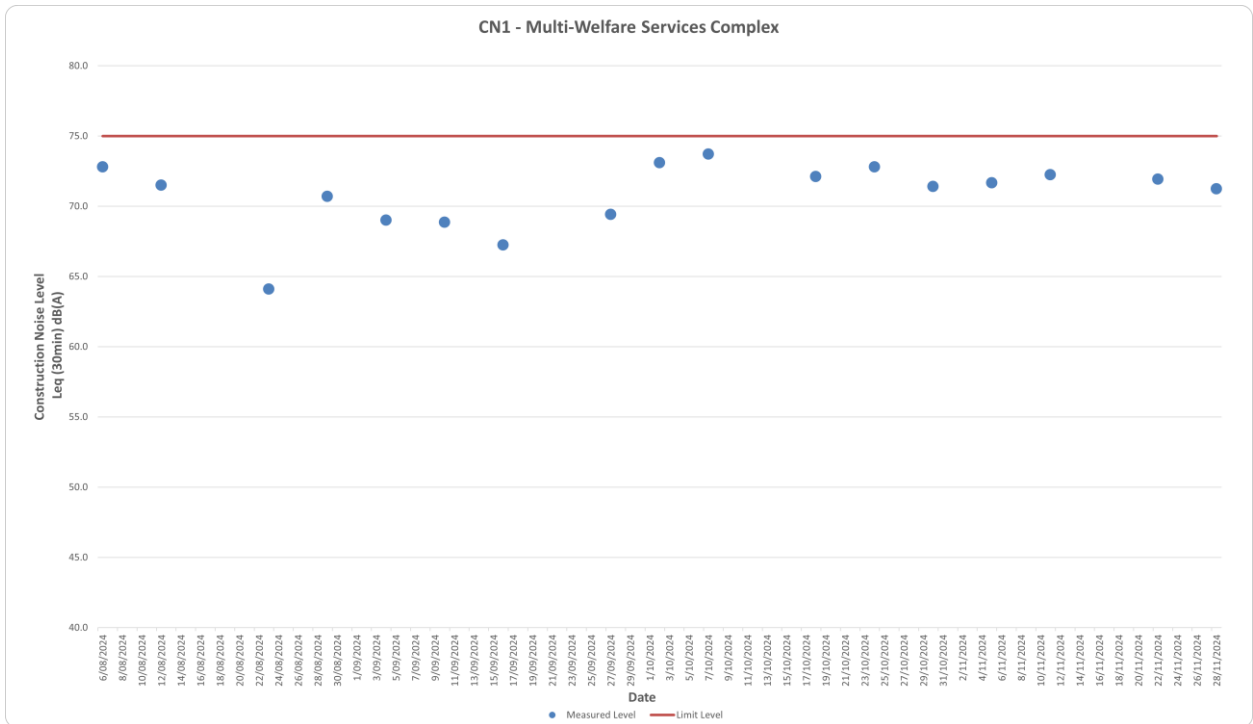
Major Construction Activities	Reporting Period			
	August 2024	September 2024	October 2024	November 2024
Site installation (Above-ground Works)	✓	✓		
Station excavation work (Above-ground Works)	✓	✓		
Foundation work for the tower crane (Above-ground Works)		✓	✓	✓
Construction of station structure (Above-ground Works)			✓	
Advance work on tunnel box roof slab opening (Above-ground Works)		✓		
Alteration and Additional works inside the tunnel box (Under-ground Works)				
1) Modification of demontable wall			✓	
2) Civil works provision for PSD installation			✓	
3) Evacuation walkway diversion & hoarding works			✓	
4) OTE precast removal/ dura steel installation				✓
5) Track level wall and slab construction				✓
6) Coring for fire hydrant pipe				✓
Advance works for station permanent structure (Above-ground Works)				
1) Concrete slab demolition (Above-ground Works)			✓	✓
2) Waterproofing work (Above-ground Works)			✓	
3) Construction of station structure (Above-ground Works)				✓

Other factors that might affect the monitoring results	Reporting Period			
	August 2024	September 2024	October 2024	November 2024
Non-project related construction activities in the adjacent construction sites	✓	✓	✓	✓

Appendix E Noise Monitoring Results and Graphic Presentation

Location CN1 - Multi-Welfare Services Complex							
Date	Weather	Time	Measure Level			Average Leq	Limit Level dB(A)
			Unit: dB (A) (5-mins)				
			Leq	L10	L90		
2024-11-05	Fine	9:04	71.2	73.6	69.3	71.7	75
		9:09	71.8	74.2	69.8		
		9:14	71.5	73.9	70.1		
		9:19	72.3	74.8	69.7		
		9:24	71.9	73.6	69.5		
		9:29	71.1	73.1	70.2		
2024-11-11	Fine	9:06	71.2	73.8	70.1	72.2	75
		9:11	72.4	74.6	70.9		
		9:16	72.9	74.9	70.6		
		9:21	72.6	74.5	70.9		
		9:26	72.2	74.2	70.6		
		9:31	71.9	73.8	70.0		
2024-11-22	Sunny	9:04	71.6	74.3	70.2	71.9	75
		9:09	72.2	74.8	70.9		
		9:14	72.6	75.1	70.7		
		9:19	71.9	74.7	70.5		
		9:24	71.3	74.2	70.0		
		9:29	71.8	74.6	70.3		
2024-11-28	Fine	9:08	70.9	73.4	67.8	71.2	75
		9:13	71.4	73.8	68.2		
		9:18	71.5	73.9	68.4		
		9:23	70.8	73.3	68.1		
		9:28	71.6	74.2	67.9		
		9:33	71.1	73.8	68.4		

Noise Monitoring Results



Major Construction Activities	Reporting Period			
	August 2024	September 2024	October 2024	November 2024
Site installation (Above-ground Works)	✓	✓		
Station excavation work (Above-ground Works)	✓	✓		
Foundation work for the tower crane (Above-ground Works)		✓	✓	✓
Construction of station structure (Above-ground Works)			✓	
Advance work on tunnel box roof slab opening (Above-ground Works)		✓		
Alteration and Additional works inside the tunnel box (Under-ground Works)				
1) Modification of demontable wall			✓	
2) Civil works provision for PSD installation			✓	
3) Evacuation walkway diversion & hoarding works			✓	
4) OTE precast removal/ dura steel installation				✓
5) Track level wall and slab construction				✓
6) Coring for fire hydrant pipe				✓
Advance works for station permanent structure (Above-ground Works)				
1) Concrete slab demolition (Above-ground Works)			✓	✓
2) Waterproofing work (Above-ground Works)			✓	
3) Construction of station structure (Above-ground Works)				✓

Other factors that might affect the monitoring results	Reporting Period			
	August 2024	September 2024	October 2024	November 2024
Non-project related construction activities in the adjacent construction sites	✓	✓	✓	✓

Appendix F Weather Condition

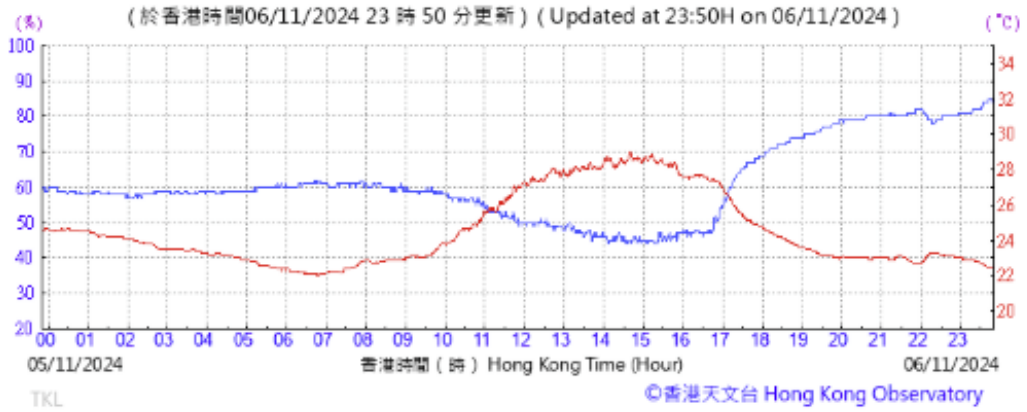
Date	Mean Pressure (hPa)	Air Temperature			Mean relative Humidity (%)	Total Rainfall (mm)
		Maximum (deg. C)	Mean (deg. C)	Minimum (deg. C)		
November 2024						
1	1009.7	30.6	26.8	24	50	0
2	1016.3	27.6	25.1	22.9	76	0
3	1017.1	29.2	26	24.6	84	0
4	1016.9	29	26.2	24.8	86	Trace
5	1017.8	29.2	26	24.1	78	Trace
6	1018.9	28	25	23.3	60	Trace
7	1019.4	27	23.9	22.3	31	Trace
8	1016.6	27.3	24.1	20.9	42	0
9	1014.5	27.9	25.2	23.4	88	1.9
10	1014.8	26.4	24.9	23.4	88	6.2
11	1014.4	26.3	24.9	24	80	0
12	1012.3	29.4	25.9	23.3	59	0
13	1010.1	26.2	25	23.2	86	14.8
14	1009.6	25.6	24.8	24.2	92	6.3
15	1010	25.1	24.2	23.5	92	36.6
16	1011.7	27.9	25.5	23.8	88	33.3
17	1014.4	26.2	24.3	22.9	85	6.1
18	1016.8	25.5	24.2	23.2	79	Trace
19	1018.6	23.2	20.1	18.4	97	7.3
20	1018.4	18.6	18.1	17.5	100	73.8
21	1018.2	21.1	19.2	17.9	89	5.6
22	1018.9	22.6	20.2	18.8	70	Trace
23	1020	22.5	20.4	18.4	86	Trace
24	1019.5	23	21.4	19.8	88	1
25	1018.4	23.5	22.3	21.1	88	Trace
26	1019	23.4	20.8	18.7	45	1.2
27	1020.8	21.5	19.2	17	45	0
28	1022	21.5	19.2	17	40	0
29	1020.9	21.2	18.8	16.6	32	0
30	1017.7	22	19	16.5	21	0

Remark: Trace means rainfall less than 0.05 mm

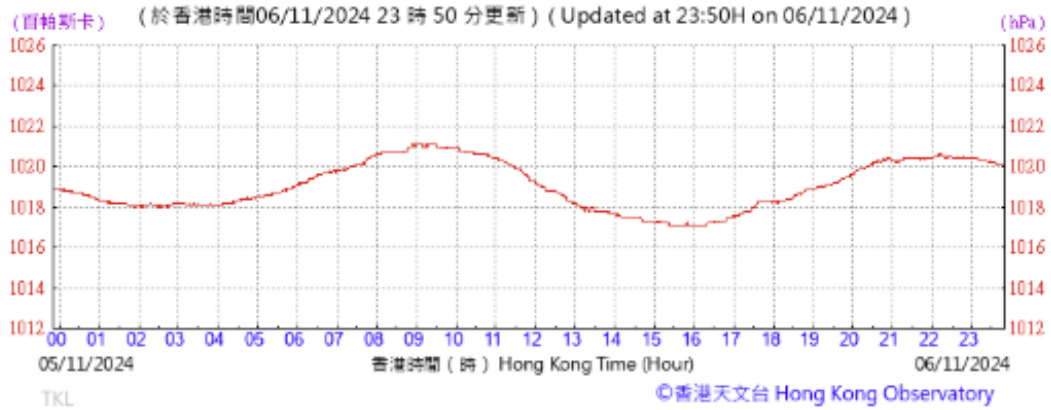
Source: Hong Kong Observatory

05 November 2024

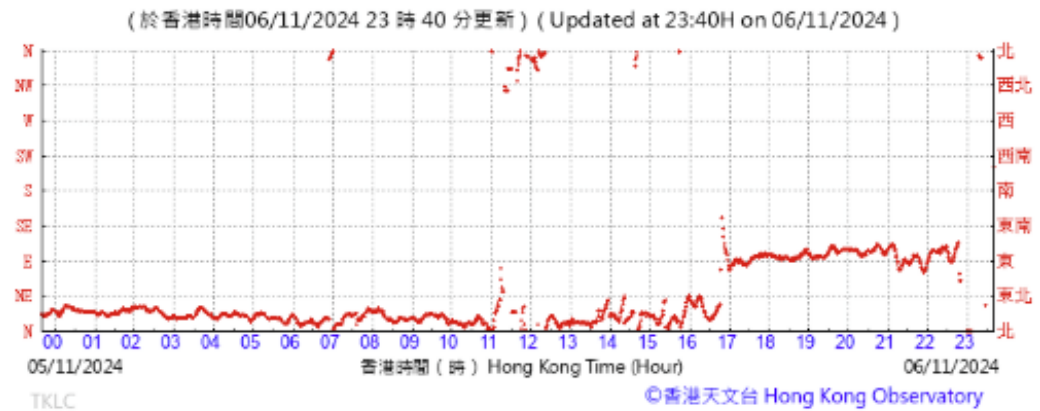
Temperature/Humidity:



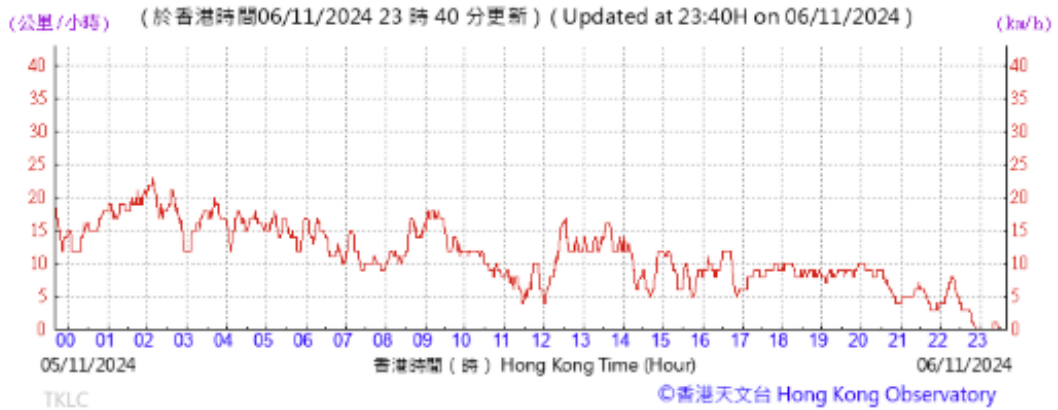
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Wind Direction:

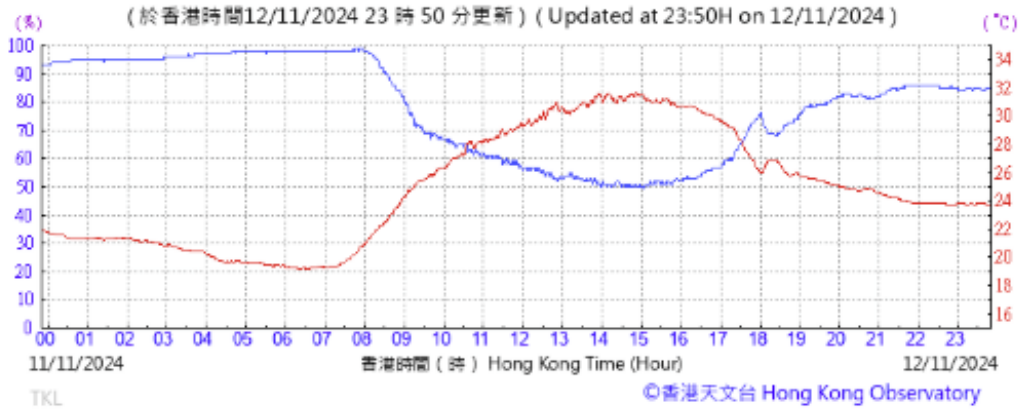


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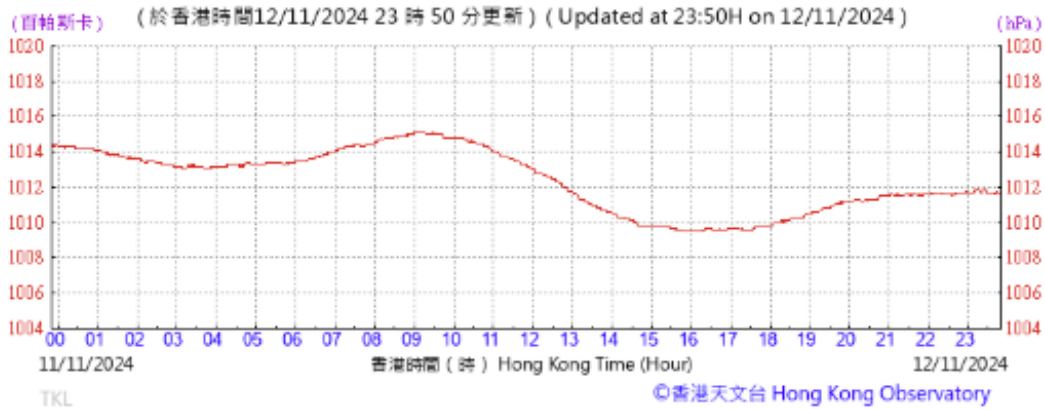


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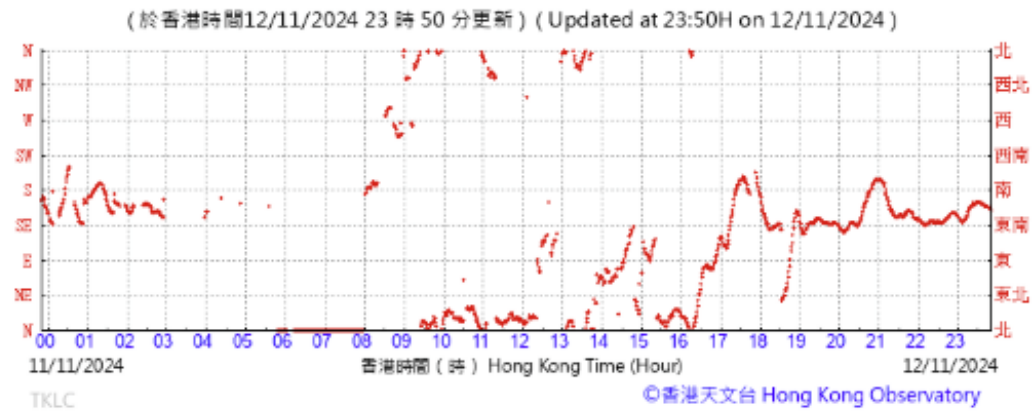
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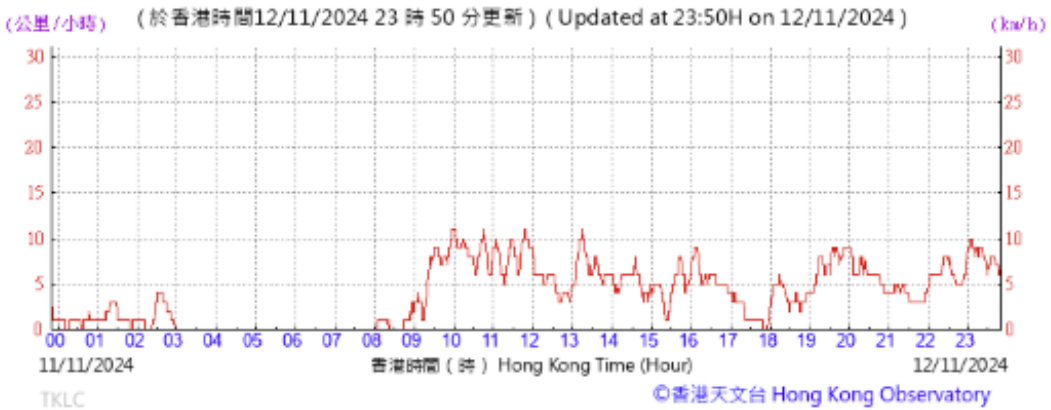
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Wind Direction:

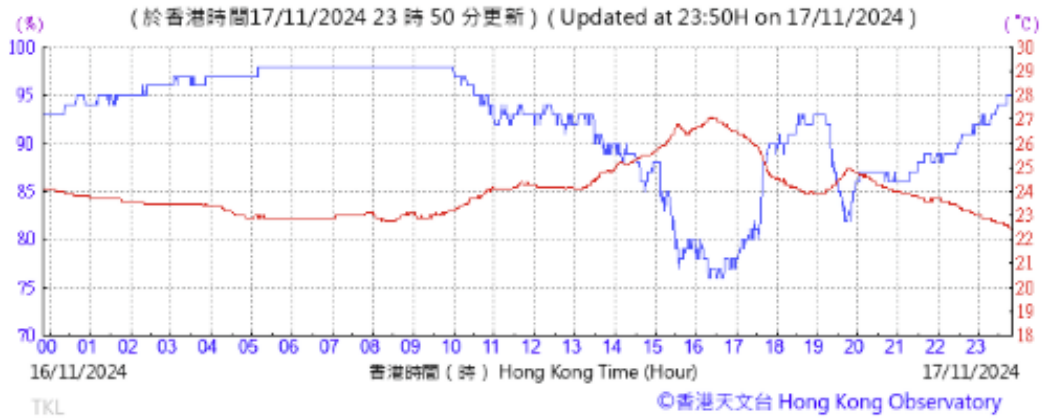


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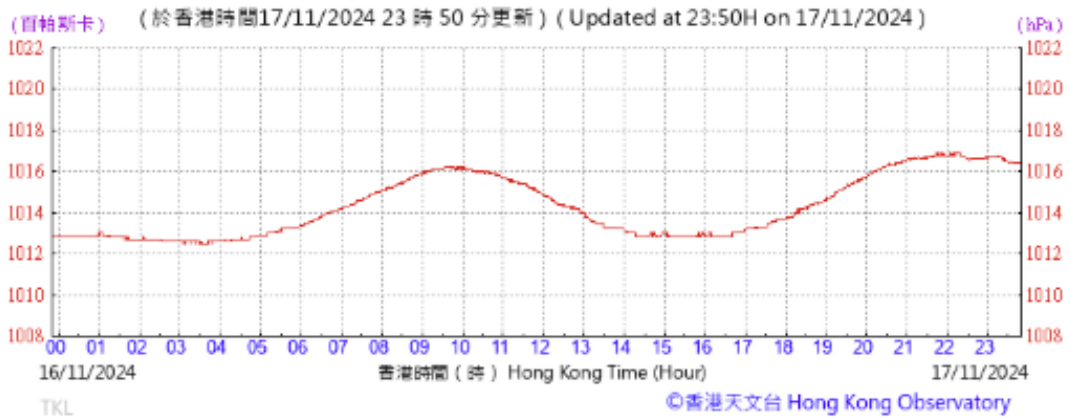


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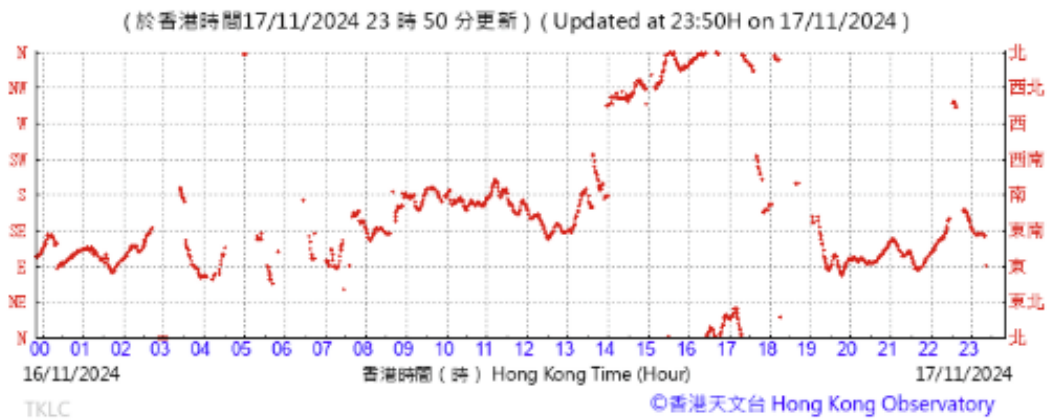
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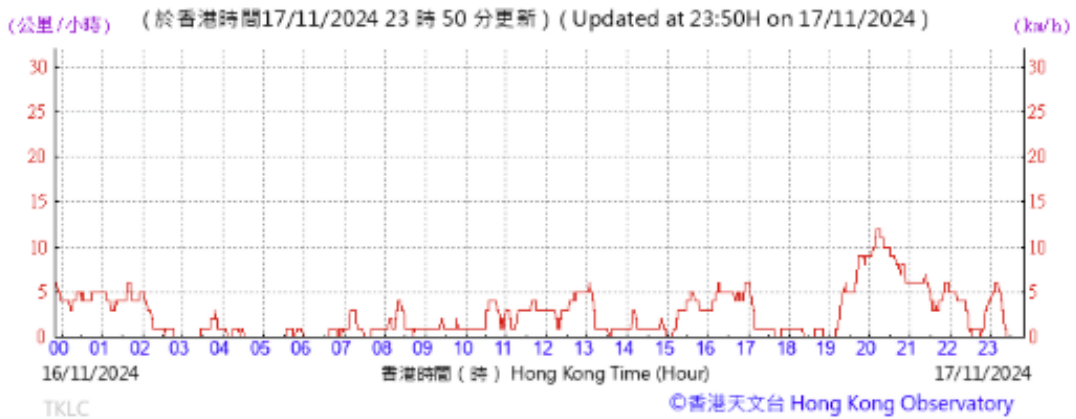
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Wind Direction:

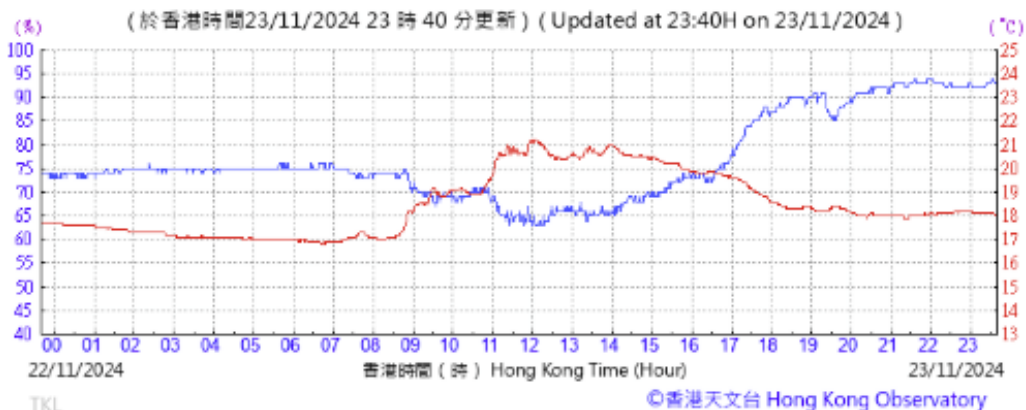


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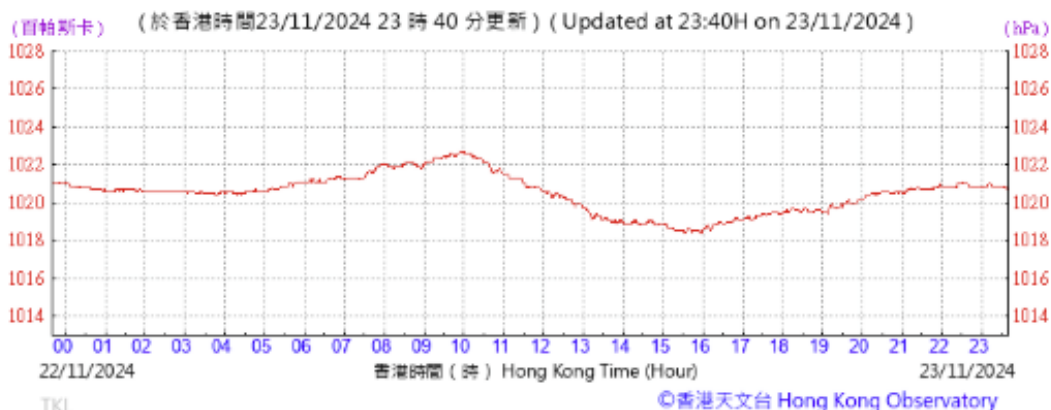


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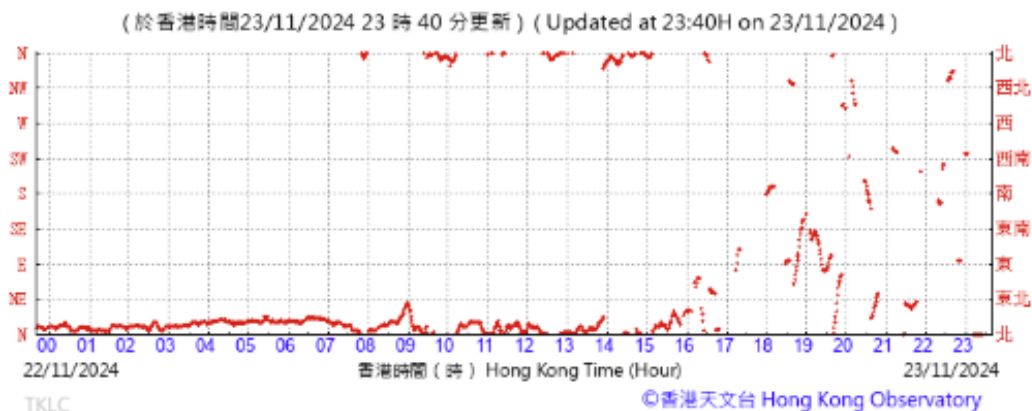
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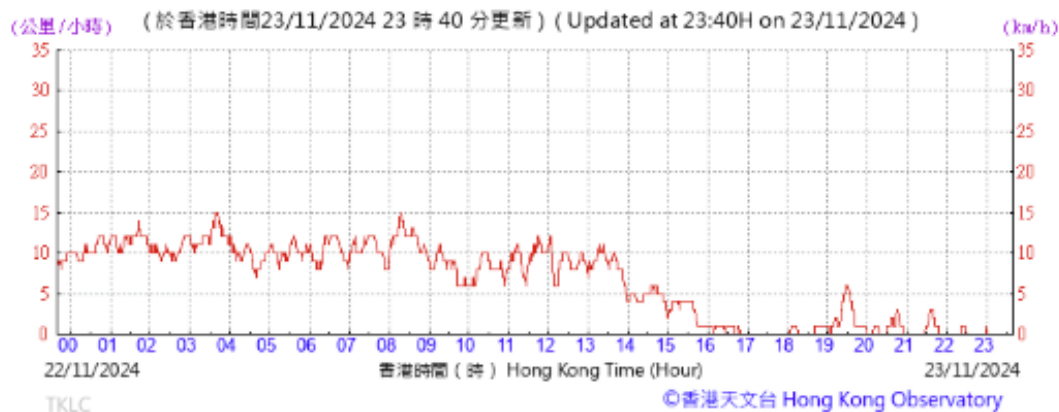
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Wind Direction:

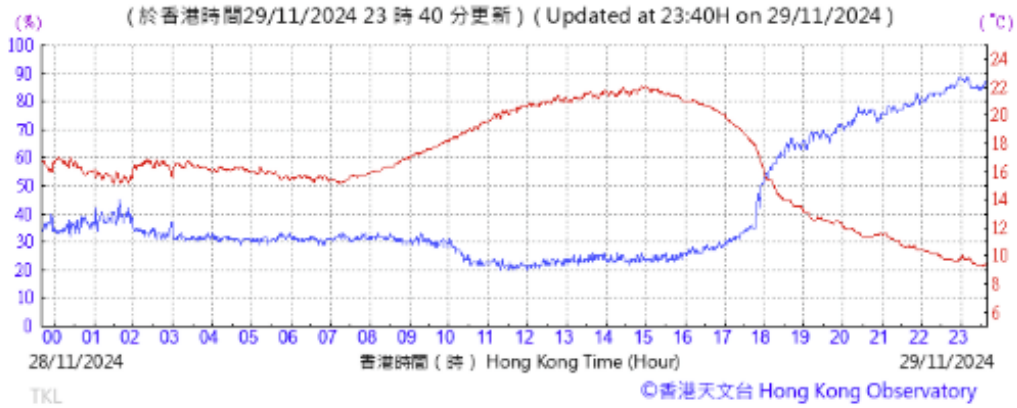


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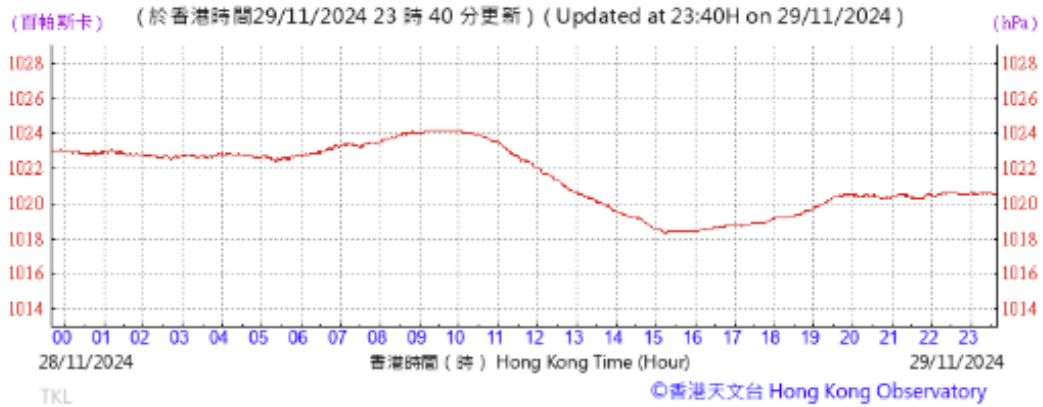


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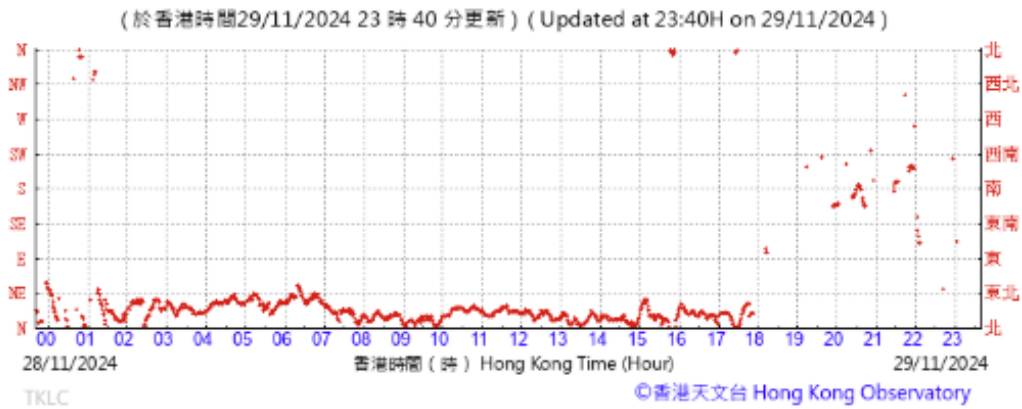
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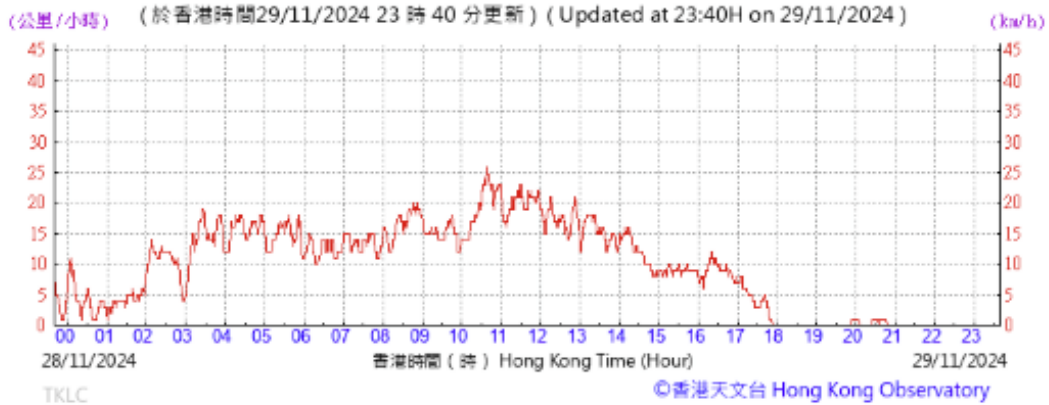
Pressure:



Wind Direction:



Wind Speed:



Appendix G Event and Action Plan

Event and Action Plan for Construction Dust

Event	Action			
	ET	IEC	ER	Contractor
Action level exceedance for one sample	<ol style="list-style-type: none"> 1. Repeat measurement to confirm finding; 2. If exceedance is confirmed, inform Contractor, IEC and ER; 3. Identify source, investigate the causes of exceedance and propose remedial measures; 4. Discuss with the Contractor, IEC and ER on the remedial measures required; 5. Increase monitoring frequency. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measures; 4. Review and advise the ET and ER on the effectiveness of the proposed remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing. 	<ol style="list-style-type: none"> 1. Identify source(s), investigate the causes of exceedance and propose remedial measures; 2. Implement remedial measures; 3. Amend working methods agreed with the ER as appropriate.
Action level exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Repeat measurement to confirm finding; 2. If exceedance is confirmed, inform Contractor, IEC and ER; 3. Identify source, investigate the causes of exceedance and propose remedial measures; 4. Advise the Contractor and ER on the effectiveness of the proposed remedial measures; 5. Increase monitoring frequency; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER to discuss the remedial measures to be taken; 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measures; 4. Review and advise the ET and ER on the effectiveness of the proposed remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. In consultation with the ET and IEC agree with the Contractor on the remedial measures to be implemented; 3. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Identify source(s), investigate the causes of exceedance and propose remedial measures; 2. Submit proposals for remedial measures to the ER, ET and IEC within three working days of notification for agreement; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Limit level exceedance for one sample	<ol style="list-style-type: none"> 1. Repeat measurement to confirm finding; 2. If exceedance is confirmed, inform IEC, ER, Contractor and EPD; 3. Increase monitoring frequency to daily; 4. Discuss with the ER, IEC and Contractor on the remedial measures and assess effectiveness; 5. Keep ER, IEC and EPD informed of the results of the effectiveness of remedial measures. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measures; 4. Review and advise the ET and ER on the effectiveness of the proposed remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Review and agree on the remedial measures proposed by the Contractor; 3. Ensure remedial measures properly implemented; 4. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Identify source(s), investigate the causes of exceedance and propose remedial measures 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial actions to ER, ET and IEC within three working days of notification for agreement; 4. Implement the agreed proposals; 5. Amend proposal if appropriate.

Event and Action Plan for Construction Dust

Event	Action			
	ET	IEC	ER	Contractor
Limit level exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Repeat measurement to confirm finding; 2. If exceedance is confirmed, inform IEC, ER, Contractor and EPD; 3. Increase monitoring frequency to daily; 4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 5. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 6. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 7. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET 2. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented; 3. Supervise the implementation of remedial measures; 4. 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. 	<ol style="list-style-type: none"> 1. Identify source(s), investigate the causes of exceedance and propose remedial measures 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial actions to ER, IEC and ET within three working days of notification for agreement; 4. Implement the agreed proposals; 5. Review and resubmit proposals if problem still not under control; 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Note:

ET – Environmental Team

IEC – Independent Environmental Checker

ER – Engineer or Engineer's Representative

Event and Action Plan for Construction Noise

Event	Action			
	ET	IEC	ER	Contractor
Action Level Exceedance	<ol style="list-style-type: none"> 1. Notify IEC, ER and Contractor; 2. Identify source and carry out investigation; 3. Discuss with the Contractor and formulate remedial measures; 4. Increase monitoring frequency to check mitigation effectiveness. 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Identify source, and carry out investigation and report the investigation to the ET, IEC and ER; 2. Submit noise mitigation proposals to IEC and ER; 3. Implement noise mitigation proposals.
Limit Level Exceedance	<ol style="list-style-type: none"> 1. Repeat measurements to confirm exceedance; 2. If exceedance is confirmed, notify the Contactor, IEC, EPD and ER; 3. Increase monitoring frequency; 4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 5. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 6. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 7. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring results and discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Ensure remedial measures properly implemented; and 3. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 	<ol style="list-style-type: none"> 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; 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. 	<ol style="list-style-type: none"> 1. Identify source and carry out investigation and report the investigation to the ET, IEC and ER; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial actions to ER, ET and IEC within 3 working days of notification; 4. Implement the agreed proposals; 5. Resubmit proposals if problem still not under control; 6. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Appendix H Summary of Exceedance

Exceedance Report for Air Quality

Location	Parameter	No. of exceedance in the reporting period		No. of accumulated exceedance	
		Action Level	Limit Level	Action Level	Limit Level
CD1a	1-hr TSP	0	0	0	0
CD2a		0	0	0	0
CD3a		0	0	0	0
CD4a		0	0	0	0
CD5		0	0	0	0

Exceedance Report for Construction Noise

Location	Parameter	No. of exceedance in the reporting period		No. of accumulated exceedance	
		Action Level	Limit Level	Action Level	Limit Level
CN1	L_{eq} (30-mins) dB(A)	0	0	0	0

Appendix I Environmental Mitigation Implementation Schedule (EMIS)

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
<i>Construction Dust Impact</i>								
S7.5.3	D1	<p>The following dust suppression measures/practices should be incorporated:</p> <ul style="list-style-type: none"> • undertaking at all times to prevent dust nuisance as a result of the activities. Effective dust suppression measures, as necessary, should be installed to minimise air quality impacts, at the boundary of the site and at any sensitive receivers. • Frequently cleaning and watering the site to minimise fugitive dust emissions. • Effective water sprays shall be used during the delivery and handling of all raw sand, aggregate and other similar materials, when dust is likely to be created, to dampen all stored materials during dry and windy weather. • Watering of exposed surfaces shall be conducted as often as possible depending on the circumstances. • Areas within the site where there is a regular movement of vehicles shall have an approved hard surface, be kept clear of loose surface materials and / or regularly watered. • Where dusty materials are being discharged to vehicle from a conveying system at fixed transfer point, a three-sided roofed enclosure with a flexible curtain across the entry shall be provided. Exhaust fans shall be provided for this enclosure and vented to a suitable fabric filter system. • Confine haulage and delivery vehicles to designated roadways inside the site. If in the opinion of the Engineer, any motorised vehicle is causing dust nuisance, the Engineer may require that the vehicle be restricted to a maximum speed of 15 km per hour while within the site area. 	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> • APCO • To control the dust impact to meet HKAQO and EIAOTM 	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>N/A</p> <p>Implemented</p>

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
		<ul style="list-style-type: none"> • Wheel cleaning facilities shall be installed and used by all vehicles leaving the site. No earth, mud, debris, dust and the like shall be deposited on public roads. Water in the wheel cleaning facility shall be changed at frequent intervals and sediments shall be removed regularly. The Contractor shall submit details of proposals for the wheel cleaning facilities to the Engineer prior to construction of the facility. Such wheel cleaning facilities shall be usable prior to any earthwork excavation activity on site. The Contractor shall provide a hard-surfaced road between any cleaning facility and the public road. • Any stockpile of dusty material shall be either: a) covered entirely by impervious sheeting; b) placed in an area sheltered on the top and the three sides; or c) sprayed with water so as to maintain the entire surface wet. • Chemical wetting agents shall only be used on completed cuts and fills to reduce wind erosion. • All site vehicular exhausts should be directed vertically upwards or directed away from ground to minimise dust nuisance as far as practicable. • Ventilation system, equipped with proprietary filters, should be provided to ensure the safe working environment inside the tunnel. Particular attention should be paid to the location and direction of the ventilation exhausts. The exhausts should not be allowed to face any sensitive receivers directly. Consideration should also be given to the location of windows, doors and direction of prevailing winds in relation to the nearby sensitive receivers. 						<p>Implemented</p> <p>Implemented</p> <p>N/A</p> <p>Implemented</p> <p>N/A (To be implemented when necessary)</p>

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
		<p>The following measures related to stockpiling, loading and unloading activities should be incorporated:</p> <ul style="list-style-type: none"> • The working area of any excavation or earthmoving operation shall spray with water immediately before, during and immediately after the operation so as to maintain the entire surface wet; • Exposed earth shall be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies; • Any stockpile of dusty materials shall be either covered entirely by impervious sheeting or placed in an area sheltered on the top and three sides; and sprayed with water so as to maintain the entire surface wet; and • Other suitable dust control measures as stipulated in the Air Pollution Control (Construction Dust) Regulation, where appropriate, should be adopted. 						<p>Implemented</p> <p>N/A (To be implemented when necessary)</p> <p>Implemented</p> <p>Implemented</p>

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
S7.5.3	D2	<p>The following good site practices to reduce the exhaust emission from the use of non-road mobile machinery and construction plant and equipment should be implemented:</p> <ul style="list-style-type: none"> Regulated machines shall be used and exempted NRMMS should be avoided where practicable. Use cleaner fuel such as Ultra Low Sulphur Diesel (ULSD) in diesel-operated construction plant to reduce sulphur dioxide emission. Use of electric PMEs where practicable. Use power supplied from power utilities when practicable (e.g. to replace generators). Switch off the engine of PMEs when idling. Implement regular and proper maintenance for plant and equipment. Employ plant and equipment of adequate size and power output and avoid overloading of the plant. Locate the PMEs away from sensitive receivers as far as possible. Erect screen to shield the emission source from sensitive receivers where necessary and practicable. 	Control emissions from non-road mobile machinery	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> Air Pollution Control (NRMMS) (Emission) Regulation To control the fuel combustion emission from PMEs 	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>N/A (To be implemented when necessary)</p>
S14.3.3.4	D3	Implement regular dust monitoring under EM&A programme during the construction phase.	Monitoring impact of dust	Contractor	Selected dust monitoring stations	Construction phase	• EIAO-TM	Implemented
Construction Noise								
S8.4.4.1	N1	The following good site practices to reduce the noise impact from construction site activities, the following measures should be implemented:	Control construction airborne noise	Contractor	All construction sites	Construction phase	• Annex 5, EIAO-TM	

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
		<ul style="list-style-type: none"> only well-maintained plant should be operated onsite 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 which available on construction equipment should be properly fitted and maintained during the construction works; spoil transportation routes should be directed away from NSRs as far as practicable; mobile plant should be sited as far away from NSRs as possible and practicable; material stockpiles, site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities; noise monitoring at selected NSRs should be conducted as far as practicable; and provide designated unloading areas away from the NSR as far as possible. 						<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>
S8.4.4.2	N2	Use of quiet plant, where necessary should be made reference to the Powered Mechanical Equipment (PME) listed in the Technical Memorandum or the Quality Powered Mechanical Equipment (QPME) / other commonly used PME listed in Environmental Protection Department (EPD) web pages as far as possible which includes the Sound Power Level (SWLs) for specific quiet PME	Reduce the noise levels from plant items	Contractor	All construction sites where practicable	Construction phase	<ul style="list-style-type: none"> Annex 5, EIAO-TM PN 1/24 	Implemented

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
S8.4.4.3	N3	Install movable temporary noise barriers (typical design is material surface density of 10kg/m2 could achieve at least 5dB(A) reduction for movable plant and 10dB(A) for stationary plant.), and full enclosure, screen the noisy plants including air compressor and generator etc.	Minimise the construction noise levels through screening	Contractor	All construction sites	Construction phase	• Annex 5, EIAO-TM	Implemented
S14.3.3.5	N4	Implement regular airborne construction noise monitoring under EM&A programme.	Monitor the airborne construction noise levels at the selected representative locations	Contractor	Proposed noise monitoring stations	Construction phase	• Annex 5, EIAO-TM	Implemented
Water Quality (Construction Phase)								
S9.3.2.2	W1	<p><u>General Construction Activities</u></p> <p>Best Management Practices (BMPs) should be implemented as far as practicable according to The Professional Persons Environmental Consultative Committee (ProPECC) Practice Note (PN) 2/23 “Construction Site Drainage”. The details of BMPs are presented as follows:</p> <ul style="list-style-type: none"> • The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 2/23. The detailed design of the sand/silt traps should be undertaken by the contractor prior to the commencement of construction; 	To reduce water quality impact from construction site runoff and general construction activities	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> • WPCO • ProPECC (PN2/23) • EIAO-TM • DSS-TM • Technical Circular No. 1/2017 • Practical Notes No. 1/2017 	Implemented

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
		<ul style="list-style-type: none"> Take precautions at any time of year when rainstorms are likely. The actions to be taken based on the guidelines in Appendix A2 of ProPECC PN 2/23; Collect, handle and dispose construction solid waste, debris and rubbish on site to avoid water quality impacts; Provide locks for all fuel tanks and storage areas and locate 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; and Regular environmental audit on the construction site should be carried out in order to prevent any malpractices. Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the water bodies, marsh and ponds. 						<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>
S9.3.2.1	W2	<u>Mitigation measures/ enhancement measures during demolition of watercourse</u> <ul style="list-style-type: none"> any surface runoff would be diverted by temporary drain or pumped away and treated by sedimentation tanks before discharge. All discharge to stormwater drain should be followed discharge licence under the Water Pollution Control Ordinance (WPCO) 	To avoid the untreated surface run-off being accidentally discharged into the adjoining water bodies.	Contractor	watercourse	Construction phase	<ul style="list-style-type: none"> WPCO ProPECC (PN2/23) EIAO-TM DSS-TM 	<p>Implemented</p> <p>Implemented</p>
S9.3.2.3	W3	<u>Mitigation measures for effluent discharge from excavation</u> <ul style="list-style-type: none"> Wastewater from excavation with a high level of suspended solids should be filtered before discharge by settlement in tanks with sufficient retention time. 	To minimize the water quality impact from the	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> WPCO ProPECC (PN2/23) 	Implemented

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
		<ul style="list-style-type: none"> All discharge to stormwater drain should be followed discharge licence under the Water Pollution Control Ordinance (WPCO) The contractor should be monitor the quantity and quality of effluent discharge to ensure compliance with the conditions of the discharge license 	wastewater generated form excavation				<ul style="list-style-type: none"> EIAO-TM DSS-TM 	<p>Implemented</p> <p>Implemented</p>
S9.3.2.4	W5	<p><u>Sewage Effluent from Construction Workforce</u></p> <ul style="list-style-type: none"> No discharge of sewage to the stormwater system and marine water will be allowed; Establish adequate and sufficient portable chemical toilets in the works areas to handle sewage from the construction workforce; Employ a licenced waste collector to clean and maintain the chemical toilets on a regular basis; and Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the surrounding environment. 	To reduce water quality impact from wastewater from construction workforce.	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> WPCO ProPECC (PN2/23) EIAO-TM DSS-TM 	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>
S9.3.2.5	W6	<p><u>Accidental Spillage</u></p> <ul style="list-style-type: none"> Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities; Any chemical waste generated shall be managed in accordance with the Waste Disposal (Chemical Waste) (General) Regulation; The Contractor should develop management procedures for chemicals used and prepare an emergency spillage handling procedure to deal with chemical spillage in case of an accident occurs; 	To minimise water quality impact from accidental spillage of chemicals	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> WPCO ProPECC (PN2/23) EIAO-TM DSS-TM WDO 	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p>

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
		<ul style="list-style-type: none"> • Any services and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with the potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges; • The service and maintenance as well as any chemical storage area would be avoided to position near the watercourse as a safe guard; • The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance shall be followed to deal with chemical wastes; • Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling, and transport; • Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents; and • Storage area should be selected at a safe location on-site and adequate space should be allocated to the storage area. 						<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
Waste Management (Construction Phase)								
S10.2.2.1	WM1	<p>Good Site Practices</p> <p>The following good site practices are recommended to reduce waste generation during construction:</p> <ul style="list-style-type: none"> • Nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all waste generated at the site; • Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling; • Provision of sufficient waste disposal points and regular collection for disposal; • Appropriate measures to minimise windblown litter and dust during transportation of waste by transporting waste in enclosed containers; • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and • A Waste Management Plan (WMP) as part of the Environmental Management Plan (EMP) should be prepared by the Contractor in accordance with ETWB TC(W) No.19/2005 and submitted to the Engineer for approval before construction works. 	Ensure proper waste management system throughout the construction	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> • WDO • ETWB TC(W) 19/2005 	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
S10.2.2.2	WM2	<p><u>Waste Reduction Measures</u></p> <p>The following recommendations are proposed to achieve reduction of waste:</p> <ul style="list-style-type: none"> • Segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal; • Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste; • Sort out demolition debris from demolition works to recover reusable/ recyclable portions (i.e. Soil, broken concrete, metal etc.); and • Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling. 	Reduce waste generation	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> • WDO 	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>
S10.2.2.3	WM3	<p><u>Storage, Collection and Transportation of Waste</u></p> <p>The following recommendation should be implemented to minimise the impacts from storage, collection and transportation of waste:</p> <ul style="list-style-type: none"> • Non-inert C&D materials (if any) should be handled and stored well to ensure secure containment; • Stockpiling area should be provided with covers and water spraying system to prevent materials from windblown or being washed away; • Different locations should be designated to stockpile each material to enhance reuse; • Remove waste in timely manner; 	Minimise impact to the environment due to storage, collection and transport of waste	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> • WDO • Land (Miscellaneous Provisions) Ordinance • ETWB TCW No. 19/2005 	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
		<ul style="list-style-type: none"> Employ the trucks with cover or enclosed containers for waste transportation; Obtain relevant waste disposal permits from the appropriate authorities; and Disposal of waste should be done at licensed waste disposal facilities. 						<p>Implemented</p> <p>Implemented</p> <p>Implemented</p>
S10.2.2.4	WM4	<p><u>C&D Materials</u></p> <p>The following recommendation should be implemented in handling the C&D materials:</p> <ul style="list-style-type: none"> Carry out on-site sorting; Allow and promote the use of recycled aggregates where appropriate; and Implement a trip-ticket system in accordance with DEVB TC(W) No. 6/2010 Trip Ticket System for Disposal of Construction and Demolition Materials, if dumping trucks are required, for each works contract to ensure that the disposal of C&D materials is properly documented and verified. <p><u>On-site Sorting of C&D Materials</u></p> <ul style="list-style-type: none"> Storage areas would be located within the site during construction phase for temporary storage of inert C&D materials. All C&D materials arising from the construction would be sorted on-site to recover the inert C&D materials and reusable and recyclable materials prior to disposal off-site. Non-inert portion of C&D materials should also be reused whenever possible and be disposed of at landfills as a last resort. 	Minimize waste impacts from C&D materials handling	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> WDO ETWB TCW No. 19/2005 Land (Miscellaneous Provisions) Ordinance 	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
		<ul style="list-style-type: none"> Inert C&D materials delivered to the public fill reception facilities should be a size less than 250mm; and Inert construction waste shall not be in liquid form such that it can be contained and delivered by dump truck as far as possible. Inert C&D materials in liquid form shall be solidified before delivering to the public fill reception facilities. 						<p>Implemented</p> <p>Implemented</p>
S10.2.2.5	WM7	<p><u>Chemical Waste</u></p> <ul style="list-style-type: none"> For those processes which generate chemical waste, it may be possible to find alternatives to eliminate the use of chemicals, to reduce the generation quantities or to select a chemical type of less impact on environment, health and safety as far as possible. Wherever possible, opportunities for the reuse and recycling of materials will be taken. If chemical waste is produced at the construction site, the Contractors should register with EPD as chemical waste producers and follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Chemical waste should be stored in appropriate containers and collected by a licensed chemical waste collector. Chemical waste (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the Chemical Waste Treatment Centre (CWTC), or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. Any unused chemicals or those with remaining functional capacity should be collected for reuse as far as practicable. 	Control the chemical waste and ensure proper storage, handling and disposal	Contractor	All construction sites	Construction phase	<ul style="list-style-type: none"> Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Waste 	<p>N/A (To be implemented when necessary)</p> <p>Implemented</p> <p>N/A (To be implemented when necessary)</p>

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
S10.2.2.6	WM8	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> • General refuse should be stored in enclosed bins separately from construction and chemical wastes. • Recycling bins should also be placed to encourage recycling. • Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean. • A reputable waste collector should be employed to remove general refuse on a regular basis. • Arrangements should be made with the recycling companies to collect the recycle waste as required. It is expected that such arrangements would minimize potential environmental impacts. • The Contractor should implement an education programme for workers relating to avoiding, reducing, reusing and recycling general waste. Participation in a local collection scheme should be considered by the Contractor to facilitate waste reduction. 	Minimise production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction phase	• WDO	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p>

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
<i>Cultural Heritage (Construction Phase)</i>								
S12.3.1.2	CH1	AMO should be informed immediately in case of discovery of antiquities or supposed antiquities in the course of the project works in accordance with the Antiquities and Monuments Ordinance (Cap. 53), so that appropriate mitigation measures, if needed, can be timely formulated and implemented in agreement with AMO.	To timely formulate and implement appropriate mitigation measures for protection of archaeological remains if needed within all construction sites	Contractor/ MTR Corporation	All construction sites	Construction phase	• Antiquities and Monuments Ordinance (Cap. 53)	N/A (To be implemented when necessary)
S12.4	CH2	If there are any buildings / structures both at grade level and underground which were built on or before 1969 within the works sites/ works areas during the construction, the Project Proponent will alert AMO in an early stage or once identified.	To timely formulate and implement appropriate mitigation measures for protection of archaeological remains if needed within all construction sites	Contractor/ MTR Corporation	All construction sites	Construction phase	• Antiquities and Monuments Ordinance (Cap. 53)	N/A (To be implemented when necessary)
<i>Landscape and Visual (Construction Phase)</i>								
S13.6.1	LV1	<u>Decorative Site Hoarding</u> Decorative site hoardings with aesthetic designs could be provided at the construction sites such that the construction site could be compatible with the surroundings and mitigate the visual impact.	Compatible with the surroundings and mitigate the visual impact.	Contractor	All construction sites	Construction Phase	• EIAO-TM	N/A (To be implemented when necessary)

ERR Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location /Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation Status
EM&A Project								
S14.3.1.4	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual.	Control EM&A performance	MTR Corporation	All construction sites	Construction Phase	<ul style="list-style-type: none"> EIAO Guidance Note No.4/2010 EIAO-TM 	Implemented
S14.3.1.3	EM2	<ul style="list-style-type: none"> An Environmental Team needs to be employed as per the EM&A Manual. An environmental impact monitoring needs to be implementing by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with. 	Perform environmental monitoring and auditing	Contractor/ MTR Corporation	All construction sites	Construction Phase	<ul style="list-style-type: none"> EIAO Guidance Note No.4/2010 EIAO-TM 	Implemented Implemented

Implementation status:	Responsibility	Description
	Implemented	Mitigation measure was fully implemented
	Implemented after Observation	Observation was made during site audit but improved/rectified by the contractor
	To be improved	Observation/reminder was made during last site audit but not yet improved/rectified by the contractor
	NC	Non-compliance of mitigation measure
	Rectified	Non-compliance but rectified by the contractor
	N/A	Not Applicable at this stage as no such site activities were conducted in the reporting period.

Appendix J Waste Flow Table for Reporting Month

MONTHLY SUMMARY WASTE FLOW TABLE

YEAR: 2024

Month	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity of Inert C&D Material Generated (A+B+C)	Reused in the Contract (A)	Reused in other Project* (B)	Disposed at Public Fill (C)	Imported Fill	Metal	Paper/ cardboard packaging	Plastic	Chemical Waste	Others, e.g. general refuse
	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000m ³)
Jan	0.2003	0.0000	0.0000	0.2003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0213
Feb	1.8998	0.0000	0.0000	1.8998	0.0000	0.0000	0.0000	0.0000	0.0000	0.0834
Mar	3.2542	0.0000	1.9264	1.3278	0.0000	0.0000	0.0000	0.0000	0.0000	0.0289
Apr	16.0120	0.0000	14.3305	1.6815	0.0000	0.0000	0.0000	0.0000	0.0000	0.0194
May	5.0315	0.0000	3.1664	1.8651	0.0000	0.0000	0.0000	0.0000	0.0000	0.0360
June	2.3810	0.0000	1.2298	1.1512	0.0000	0.0000	0.0000	0.0000	0.0000	0.0321
Sub-total	28.7787	0.0000	20.6530	8.1256	0.0000	0.0000	0.0000	0.0000	0.0000	0.2209
July	15.1246	0.4276	14.5542	0.1428	0.0000	0.0000	0.0000	0.0000	0.0000	0.0876
Aug	24.3840	0.0000	23.8691	0.5149	0.0000	0.0000	0.0000	0.0000	0.0000	0.1064
Sep	34.1688	0.0000	33.9259	0.2429	0.0000	0.0000	0.0000	0.0000	0.0000	0.0393
Oct	1.1911	0.0000	0.0000	1.1911	0.0000	0.0000	0.0000	0.0000	0.0000	0.0376
Nov	0.8408	0.0000	0.0000	0.8408	0.0000	0.0000	0.0000	0.0000	0.0000	0.0476
Dec	-	-	-	-	-	-	-	-	-	-
Sub-total[^]	75.7094	0.4276	72.3492	2.9326	0.0000	0.0000	0.0000	0.0000	0.0000	0.3185
Total[^]	104.4880	0.4276	93.0022	11.0582	0.0000	0.0000	0.0000	0.0000	0.0000	0.5394

* Spoil collected by EPD listed recycler for C&D materials (Tapbo Environmental Ltd.)

Assumption:

- i) Density of C&D material = 2.2 tons/m³
- ii) Density of general refuse = 1.6 tons/m³
- iii) Inert C&D material should refer to rock, soil, concrete debris and asphalt generated from site.

**Appendix K Cumulative statistics on Environmental
Complaints, Notifications of Summons and
Successful Prosecutions**

Statistic Summary of Environmental Complaints

Reporting Period	Environmental Complaints Statistics		
	Frequency	Nature	Follow-up Actions
1 November 2024 – 30 November 2024	0	N/A	N/A
Cumulative	0	N/A	N/A

Statistical Summary of Environmental Summons

Reporting Period	Environmental Summons Statistics		
	Frequency	Nature	Follow-up Actions
1 November 2024 – 30 November 2024	0	N/A	N/A
Cumulative	0	N/A	N/A

Statistical Summary of Environmental Prosecution

Reporting Period	Environmental Prosecution Statistics		
	Frequency	Nature	Follow-up Actions
1 November 2024 – 30 November 2024	0	N/A	N/A
Cumulative	0	N/A	N/A

Appendix L Complaint Log

Environmental Complaints Log

Reference No.	Date of Complaint Received	Received From	Received By	Nature of Complaint	Date of Investigation	Investigation summary & Conclusion	Date of Reply
Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Appendix M Observation and Rectification Photos

Date	Environmental Observation(s) / Recommendation(s)	Rectification Photos	Close-out Date / Status
2024 - 11 - 06	No Major environmental issue was observed during the site inspection.	NA	NA
2024 - 11 - 13	No Major environmental issue was observed during the site inspection.	NA	NA
2024 - 11 - 20	No Major environmental issue was observed during the site inspection.	NA	NA
2024 - 11 - 27	No Major environmental issue was observed during the site inspection.	NA	NA

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