MTR Corporation Limited

Sheung Shui to Lok Ma Chau Spur Line

Monthly EM&A Report for Kwu Tung Station

(October 2023)

Verified by:

Adi Lee
Independent Environmental Checker
Meinhardt Infrastructure and Environment Limited
2859 5443

Date: 10 November 2023

MTR Corporation Limited

Sheung Shui to Lok Ma Chau Spur Line

Monthly EM&A Report for Kwu Tung Station

(October 2023)

Certified by:

Viola Tong
Environmental Team Leader
MTR Corporation Limited
2163 6558

Date: 10 November 2023

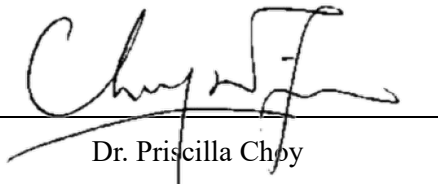
Kum Shing (K.F.) Construction Company Limited

Contract 1633 –Alteration andAddition Works at Kwu Tung for East Rail Line Protection Works

Monthly Environmental Monitoring and Audit Report for October 2023

(Version 1.2)

Certified By



Dr. Priscilla Choy

(Environmental Team Leader)

REMARKS:

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

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

WELLAB LIMITED
Room 1714, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong
Tel: (852) 2898 7388 Fax: (852) 2898 7076
Website: www.wellab.com.hk

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EXECUTIVE SUMMARY

Introduction

1. This is the 9th monthly Environmental Monitoring and Audit (EM&A) Report for the Project of Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works (hereinafter called the "the Project") under Environmental Permit No. FEP-06/129/2002/I. This report was prepared by Wellab Limited under "Contract 1633 – Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works" (hereinafter called the "Service Contract"). This report presenting the EM&A works carried out during the reporting period from 1 to 31 October 2023.

Environmental Monitoring and Audit Progress

2. A summary of the EM&A activities in this reporting month is listed in **Table I** below:

Table I Summary Table for EM&A Activities in the Reporting Month

EM&A Activities	Date
Air Quality Monitoring	4, 10, 16, 20 and 26 October 2023
Noise Monitoring	4, 10, 16 and 26 October 2023
Environmental Site Inspection	3, 10, 17 and 24 October 2023

Breaches of Action and Limit Levels

3. Summary of the environmental exceedances of the reporting month is tabulated in **Table II**.

Table II Summary Table for Events Recorded in the Reporting Month

Environmental Monitoring	Parameter	No. of Non-Project related Exceedances		No. of Exceedance related to the Construction Works		Action Taken
		Action Level	Limit Level	Action Level	Limit Level	
Air Quality	1-hr TSP	0	0	0	0	N/A
Noise	$L_{eq(30min)}$	0	0	0	0	N/A

Air Quality

4. All construction air quality monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Construction Noise

5. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Environmental Non-Compliance

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

Environmental Complaint

7. No environmental complaint was received in the reporting month.

Notification of Summons and Successful Prosecutions

8. No notification of summons or successful prosecutions was received in the reporting month.

Reporting Changes

9. No reporting change was made in the reporting month.

Future Key Issues

10. The construction works under Contract 1633 have been substantially completed, and all defection works have been completed in the reporting month (October 2023). The EM&A Programme in accordance with EP requirements will be handed over to Contract 1601 starting from 1st November 2023.

1 INTRODUCTION

1.1 Wellab Limited was commissioned by Kum Shing (K.F.) Construction Company Limited (main Contractor) as the Environmental Team to undertake the Environmental Monitoring and Audit (EM&A) services for the Works Contract involved in the implementation of the Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works to ensure that the environmental performance of the Works Contract 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 Railway Station at Kwu Tung and other relevant statutory requirements.

Purpose of the report

1.2 This is the 9th EM&A Report which summarizes the key findings of the EM&A programme in October 2023.

Structure of the report

1.3 The structure of the report is as follows:

Section 1:	**Introduction -** purpose and structure of the report.
Section 2:	**Project Information -** summarizes background and scope of the Project, site description, project organization and contact details, construction programme, the construction works undertaken and the status of Environmental Permits/Licences during the reporting month.
Section 3:	**Air Quality Monitoring -** summarizes the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequencies, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.
Section 4:	**Noise Monitoring -** summarizes the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequencies, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.
Section 5:	**Landscape and Visual Monitoring –** summarizes the audit results of the site inspection undertaken within the reporting month.
Section 6	**Environmental Site Inspection -** summarizes the audit findings of the weekly site inspections undertaken within the reporting month.

Section 7: **Environmental Non-conformance -** summarizes any monitoring exceedance, environmental complaints, environmental summons and successful prosecutions within the reporting month.

Section 8: **Future Key Issues -** summarizes the impact forecast, proposed mitigation measures and monitoring schedule.

Section 9: **Conclusions and Recommendations**

2 PROJECT INFORMATION

Background

2.1 The Environmental Impact Assessment (EIA) report for "Sheung Shui to Lok Ma Chau Spur Line" (Register No.: AEIAR-052/2002) (i.e., hereafter called the approved EIA for LMC Spur Line) 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 for LMC Spur Line had considered the potential construction and operational impacts for the railway station at Kwu Tung enabling works including the station box structure.

2.2 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.

2.3 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.

2.4 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 railway station at Kwu Tung, variation of this FEP would be required.

2.5 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.

2.6 The scope of works under the railway station at Kwu Tung 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.

2.7 To facilitate the future major construction of the railway station at Kwu Tung, alteration and additional works to the operational railway facilities of the East Rail Line at Kwu Tung are required to be carried out in advance under this contract. The scope of the works for the Project comprises the following:

- Installation of Automatic Deformation and Monitoring System (ADMS) and other monitoring instruments within existing EAL tunnels with the provisions of a web-based monitoring data management system and carrying out monitoring works;
- Construction of trackside steel evacuation walkway deck and fire mains within the EAL tunnel.
- Installation of cable brackets and diversion of existing cables within EAL tunnels.
- Removal of existing steel bar fencing at Emergency Access Point (EAP) EAP 3 and security provisions.
- Site formation, tree removal and tree transplanting works.
- Diversion of existing utilities and associated building services serving EAP 3, EAP 4 and EAL.
- Diversion of existing Emergency Vehicular Access (EVA) serving EAL and associated works.
- Installation of steel walkways leading to EAP 3 and EAP 4 and associated works;
- All temporary railway protection works such as hoardings, security etc. during the course of providing the Works.
- Preparation of EDOC, BUGN and method statements of the works for the approval of the Railway Operator and the Project Manager.
- All statutory submissions, inspections and testing and commissioning necessary for the works

2.8 The site layout plan for the Project is shown in Figure 1.

Project Organization

2.9 The project organizational chart and contact details are shown in **Figure 3.**

Summary of Construction Works Undertaken During Reporting Month

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

- UU Installation for Detention Pond Decommissioning (Aboveground);
- Site preparation for main pre-fabricated units of tunnel walkway (Underground);
- Install Steel Evacuation Walkway Deck, Fire Hydrant & Fire Mains (Underground); and
- New Cable Bracket Installation and Cable shifting (Defect rectification) (Underground).

Construction Programme

2.11 Copies of Contractor' s construction programmes are provided in **Appendix A**.

Status of Environmental Licences, Notifications and Permits

2.12 A summary of the relevant permits, licences, and/or notifications on environmental protection for this Project is presented in **Table 2.1**.

Table 2.1 Status of Environmental Licences, Notifications and Permits

Permit / Licence No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
FEP-06/129/2002/I	24/12/2021	N/A	Valid
Construction Noise Permit (CNP)			
GW-RN0868-23	01/09/2023	30/11/2023	Valid
Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
487966	04/01/2023	N/A	Valid
Billing Account for Disposal of Construction Waste			
7046198	09/01/2023	N/A	Valid
Registration of Chemical Waste Producer			
5213-545-K3523-01	01/02/2023	N/A	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
WT00043860-2023	01/06/2023	30/06/2028	Valid

3 AIR QUALITY MONITORING

Monitoring Requirements

3.1 In accordance with the Updated EM&A Manual, impact 1-hour Total Suspended Particulate (TSP) monitoring shall be conducted to monitor the air quality for the project. **Appendix B** shows the established Action/Limit Level for the air quality monitoring works.

3.2 Impact 1-hour TSP monitoring was conducted for at least three times every 6 days at the designated air quality monitoring stations.

Monitoring Location

3.3 According to Section 5.5.7 of the Updated EM&A Manual, impact air quality monitoring was conducted at the five designated monitoring stations for the Project as shown in **Figure 2**. The locations of the existing air sensitive receivers (ASR) around the Project as identified in the ERR are shown in **Figure 2b**. **Table 3.1** describes the location of the air quality monitoring stations.

Table 3.1 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
CD5a	Dills Corner Garden

Monitoring Equipment

3.4 Upon approval of the IEC, 1-hour TSP levels can be measured by direct reading method with using handheld dust particle measuring device which is capable of producing comparable results as that by the high-volume sampling method, to indicate short event impacts.

3.5 The proposed use of portable direct reading dust meters was submitted to IEC and agreement was obtained from the IEC in accordance with Section 5.4.5 of the Updated EM&A Manual.

3.6 **Table 3.2** summarizes the equipment used in the air quality monitoring programme. Copies of calibration certificates are attached in **Appendix C**.

Table 3.2 Air Quality Monitoring Equipment

Monitoring Station	Equipment	Manufacturer	Model and Make	Quantity
CD1a	Dust Monitor (1-hour)	Met One Instruments	AEROCET-831	8
CD2a				
CD3a				
CD4a				
CD5a				

3.7 According 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.

3.8 The general weather conditions (i.e., sunny, cloudy or rainy) were recorded by the field staffs during the monitoring days.

Monitoring Parameters, Frequency and Duration

3.9 **Table 3.3** summarizes the monitoring parameters and frequencies of impact air quality monitoring during the Works Contracts activities. The air quality monitoring schedule for the reporting month is shown in **Appendix D**.

Table 3.3 Air Quality Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hour TSP	Three times/ 6 days

Monitoring Methodology and QA/QC Procedure

1-hour TSP Air Quality Monitoring

Instrumentation

3.10 Direct reading dust meter was deployed for the air quality monitoring as shown in **Table 3.2**.

3.11 The measuring procedures of the dust meter are in accordance with the Manufacturer's Instruction Manual as follows:

(Met One Instrument: Model no/ AEROCET-831)

- The 1-hour dust meter is placed at least 1.3 meters above ground.
- Press and hold the Power key momentarily to power on the unit and make sure that the battery level was not flash or in low level.
- Allow the instrument to stand for about 3 second to display the Sample Screen minutes.
- Press the START / STOP key to run the internal vacuum pump for 1 minute and ready to use.
- Use the select dial to select the PM range and press the START / STOP key to start a measurement.
- Finally, push the START/STOP key to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, value and site condition were recorded during the monitoring period.
- All data were recorded in the data logger for further data processing.

Maintenance/Calibration

3.12 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 on a bi-monthly basis throughout all stages of the air quality monitoring. The calibration certificates of the monitoring equipment are presented in **Appendix C**.
- The correlation coefficient was checked to establish the correlation relationship between the dust meter and HVS. The correlation factor was determined by comparing the results of HVS and 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.

Results and Observations

3.13 The monitoring results for 1-hour TSP monitoring are summarized in **Table 3.4**. Detailed monitoring results and graphical presentations of 1-hour TSP monitoring results are shown in **Appendix E**. The weather information of the reporting period is summarized in **Appendix G**.

Table 3.4 Summary Table of 1-hour TSP Monitoring Results during the Reporting Month

Monitoring Station	Concentration (µg/m³)		Action Level, µg/m³	Limit Level, µg/m³
	Average	Range		
CD1a	38.8	10.3 – 87.0	275	500
CD2a	48.4	30.2 – 92.9	279	
CD3a	48.2	8.9 – 106.9	279	
CD4a	65.3	14.3 – 164.7	281	
CD5a	74.1	35.8 – 120.4	280	

3.14 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedances were recorded.

3.15 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 3.5**:

Table 3.5 Observation at Air Quality Monitoring Stations

Monitoring Station	Major Dust Sources
CD1a	- Road traffic - Main construction site: Excavator - Other construction site: Excavator, dump truck, drilling rig, crane, generator, piling,
CD2a	- Road traffic - Main construction site: Excavator - Other construction site: Crane, drilling rig
CD3a	- Road traffic - Main construction site: Excavator - Other construction site: Crane, drilling rig
CD4a	- Road traffic - Main construction site: Excavator - Other construction site: Excavator, dump truck, crane, drilling rig, piling, generator
CD5a	- Road traffic - Main construction site: Excavator - Other construction sites: Excavator, dump truck, drilling rig, crane, generator, piling, sheet piling

Event and Action Plan

3.16 Should any non-compliance of the criteria occur, actions in accordance with the Event/Action Plan in **Appendix H** shall be carried out.

4 NOISE MONITORING

Monitoring Requirements

4.1 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.

4.2 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. **Appendix B** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Location

4.3 According to Section 6.5.4 of the Updated EM&A Manual, impact noise monitoring was conducted at one designated noise monitoring stations as shown in **Figure 2**. The locations of the existing noise sensitive receivers (NSR) around the Project as identified in the ERR are shown in **Figure 2b**. **Table 4.1** describes the locations of the noise monitoring stations.

Table 4.1 Location of Noise Monitoring Stations

Monitoring Station(s)	Location(s)
CN1a	Dills Corner Garden

Monitoring Equipment

4.4 Integrating Sound Level Meters were used for impact noise monitoring. The meters were Type 1 sound level meter capable of giving a continuous readout of the noise level readings including equivalent continuous sound pressure level (L_{eq}) and percentile sound pressure level (L_x) that complied with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications. **Table 4.2** summarizes the noise monitoring equipment used. Copies of calibration certificates are attached in **Appendix C**.

Table 4.2 Noise Monitoring Equipment

Equipment	Manufacturer	Model	Quantity
Sound Level Meter	BSWA	BSWA 308	4
Acoustical Calibrator	SVANTEK	SV30A	2

Monitoring Parameters, Frequency and Duration

4.5 **Table 4.3** summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix D**.

Table 4.3 Noise Monitoring Parameters, Duration and Frequency

Monitoring Stations	Parameters and duration	Frequency	Measurement
CN1a	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	Free field [1]

Remarks:
[1]: Correction of +3dB (A) for free-field measurement.

Monitoring Methodology and QA/QC Procedures

4.5 The monitoring procedures are as follows:

- The sound level meter was set on a tripod at a point 1m from the exterior of the noise sensitive facade 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 the correct functioning of the meter;
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:

  — frequency weighting : A
  — time weighting : Fast
  — time measurement : $L_{eq\ (30\ min.)}$ dB(A)
  (As six consecutive $L_{eq,\ 5min}$ readings) 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.

Maintenance and Calibration

4.6 The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.

4.7 The sound level meter and calibrator were checked and calibrated at yearly intervals.

4.8 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.

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

Results and Observations

4.10 The noise monitoring results are summarized in **Table 4.4**. Detailed monitoring results and graphical presentations of noise monitoring are shown in **Appendix F**. The weather information for the reporting month is summarized in **Appendix G**.

Table 4.4 Summary Table of Noise Monitoring Results during the Reporting Month

Monitoring Station	Noise Level $L_{eq\ (30\ min)}$ dB(A)	Limit Level dB(A)
CN1a [1]	69.2 – 74.5	75

Remarks:
[1]: Correction of +3dB (A) for Free-field Measurement.

4.11 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 I**.

4.12 According to our field observations, the major noise sources identified at the designated noise monitoring stations in the reporting month are as follows:

Table 4.5 Observation at Noise Monitoring Stations

Monitoring Station	Major Noise Source
CN1a	1. Road Traffic 2. Construction noise from main site: Excavator 3. Construction noise from other sites: Excavator, crane, piling, dump truck, drilling rig, generator

Event and Action Plan

4.13 Should any project related non-compliance of the criteria occur, action in accordance with the Event Action Plan in **Appendix H** shall be carried out.

5 LANDSCAPE AND VISUAL MONITORING

Monitoring Requirements

5.1 According to the Section 11.3 of the Updated EM&A Manual, the 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.

5.2 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 6.1**. The implementation status is given in **Appendix J**.

6 ENVIRONMENTAL SITE INSPECTION

Site Audits

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

6.2 Site audits were conducted by ET with the representative of MTR and the Contractor on 3rd, 10th, 17th, and 24th October 2023 in the reporting month. Joint site audits with the representative of the MTR's Representative, the Contractor and IEC were carried out on 17th October 2023.

6.3 During site inspections in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit sessions are summarized in **Table 6.1** and **Appendix N**.

Table 6.1 Observations and Recommendations of Site Audit

Date	Parameters	Observation(s) / Recommendation(s)	Follow Up Action
03/10/2023	--	No major environmental deficiency was identified during the site inspection.	--
10/10/2023	--	No major environmental deficiency was identified during the site inspection.	--
17/10/2023	--	No major environmental deficiency was identified during the site inspection.	--
24/10/2023	--	No major environmental deficiency was identified during the site inspection.	--

Implementation Status of Environmental Mitigation Measures

6.4 According to 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 J**.

Solid and Liquid Waste Management Status

6.5 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 J**) are properly implemented by the Contractor. Waste management practice including waste handling, storage, transportation and disposal were audited.

6.6 The Contractors are advised to minimize the wastes generated through the 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 J.

6.7 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 K**.

6.8 In the reporting month, no felled trees were regarded as yard waste and delivered to the EPD Y-Park at Tsang Tsui, Tuen Mun.

7 ENVIRONMENTAL NON-CONFORMANCE

Summary of Exceedances

7.1 No exceedance of Action and Limit Levels of air quality was recorded in the reporting month.

7.2 No exceedance of Action and Limit Levels of construction noise was recorded in the reporting month.

7.3 Should the monitoring results of the environmental monitoring parameters at any designated monitoring stations indicate that the Action / Limit Levels are exceeded, the actions in accordance with the Event and Action Plans in **Appendix H** be carried out. The summary of exceedance record in reporting month is shown in **Appendix I**.

Summary of Environmental Non-Compliance

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

Summary of Environmental Complaint

7.5 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**.

Summary of Environmental Summon and Successful Prosecution

7.6 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 M**.

8 FUTURE KEY ISSUES

Key Issues in the Coming Month(s)

8.1 The construction works under Contract 1633 have been substantially completed, and all defection works have been completed in the reporting month (October 2023). The EM&A Programme in accordance with EP requirements will be handed over to Contract 1601 starting from 1st November 2023.

9 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

9.1 This Monthly EM&A Report presents the EM&A work undertaken in October 2023 in accordance with EM&A Manual.

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

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

9.4 Environmental site inspections were conducted on 3rd, 10th, 17th, and 24th October 2023 by ET in the reporting month. No environmental non-compliance was recorded in the reporting month.

9.5 No environmental complaint, notification of summons or successful prosecutions was received in the reporting month.

9.6 The ET would keep track on the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Recommendations

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

9.8 However, the Contractor was reminded to implement the environmental mitigation measures as stipulated in the EMIS of the Updated EM&A Manual proactively.

FIGURE(S)

LEGEND:

WORKS AREA BOUNDARY

PUBLIC ROAD / FOOTPATH

MA TSO LUNG ROAD

Open Storage

TUNG FONG

東方

1633.M1

1633.M2

Sheung Shui Pui Yau Kindergarten

PO LAU ROAD

HO SHEUNG HEUNG ROAD

Shek Tsai Leng

0 10 20 30 40 50
METRES
1 : 1000

REV	DESCRIPTION	BY	DATE	APPROVED
A	FIRST ISSUE	JH	MAY 22	DN

DRAWN	PKN
DESIGNED	JH
CHECKED	JH
APPROVED	DN
DATE	4/MAY/2022

MTR

KWU TUNG STATION (EAL)

ORIGINATOR
CAPITAL WORKS BUSINESS UNIT | LAND ADMINISTRATION SECTION

CADD REF.
1633_t_000_pld_p07_001a.dgn

TITLE
CONTRACT 1633
KEY PLAN OF WORKS AREA
APPENDIX 'F'

Fig. 1

SCALE 1 : 1000 (A1)

DRAWING NO. 1633/T/000/PLD/P07/001

REV. A

PLOT DRV: X:\CADD_Library\MicroStation\Workspace\plotdrv\PDF_Color_300dpi_080923.plt
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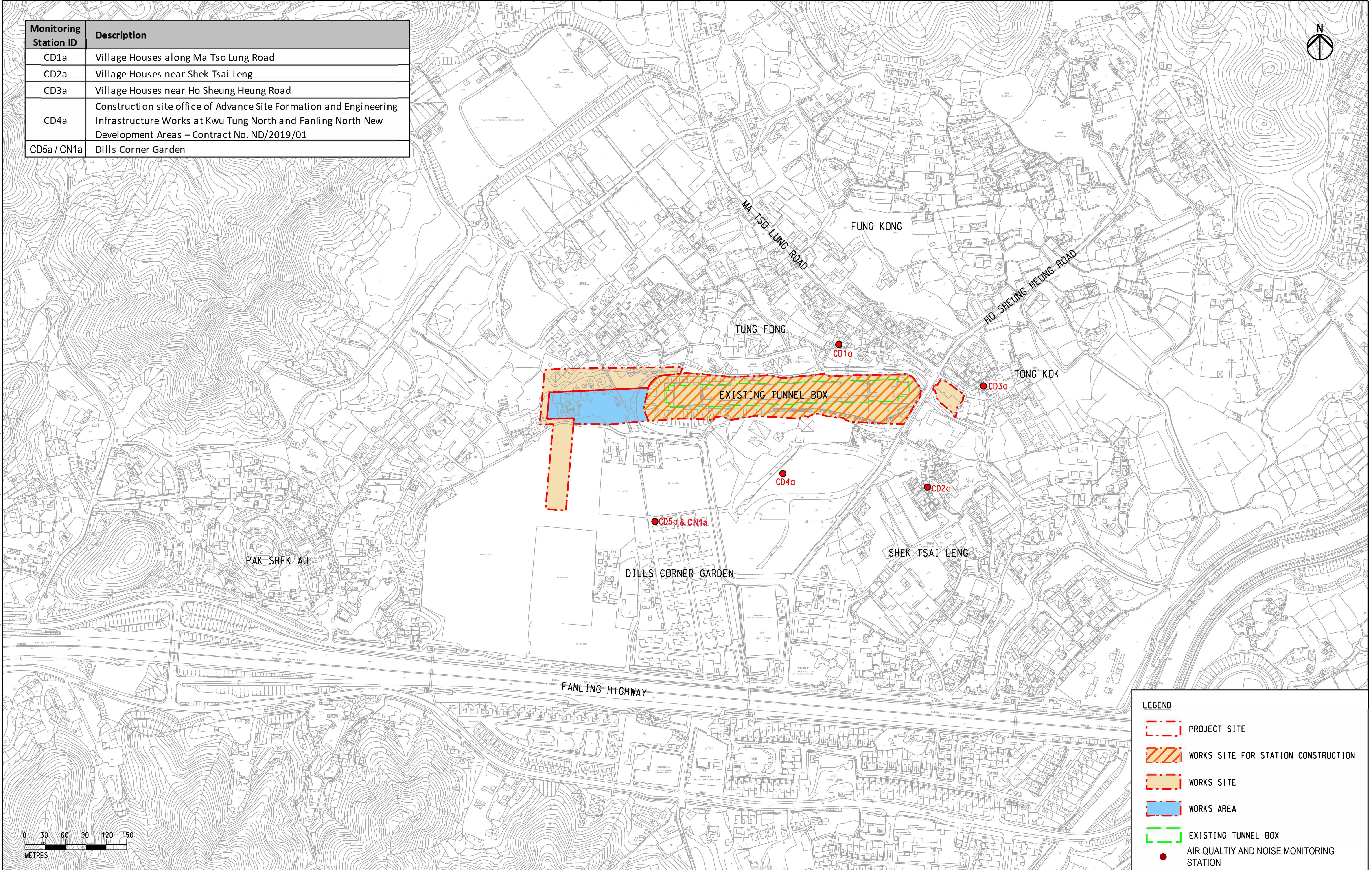
Monitoring Station ID	Description
CD1a	Village Houses along Ma Tso Lung Road
CD2a	Village Houses near Shek Tsai Leng
CD3a	Village Houses near Ho Sheung Heung Road
CD4a	Construction site office of Advance Site Formation and Engineering Infrastructure Works at Kwu Tung North and Fanling North New Development Areas – Contract No. ND/2019/01
CD5a / CN1a	Dills Corner Garden



REV	DESCRIPTION	BY	DATE	APPROVED
B	SECOND ISSUE	GL	02/23	FC
A	FIRST ISSUE	GL	12/22	FC

DRAWN	GL
DESIGNED	GL
CHECKED	JC
APPROVED	FC
DATE	10/FEB/23

MTR

ORIGINATOR ARUP

Supported by : Arcadis Hong Kong Ltd.

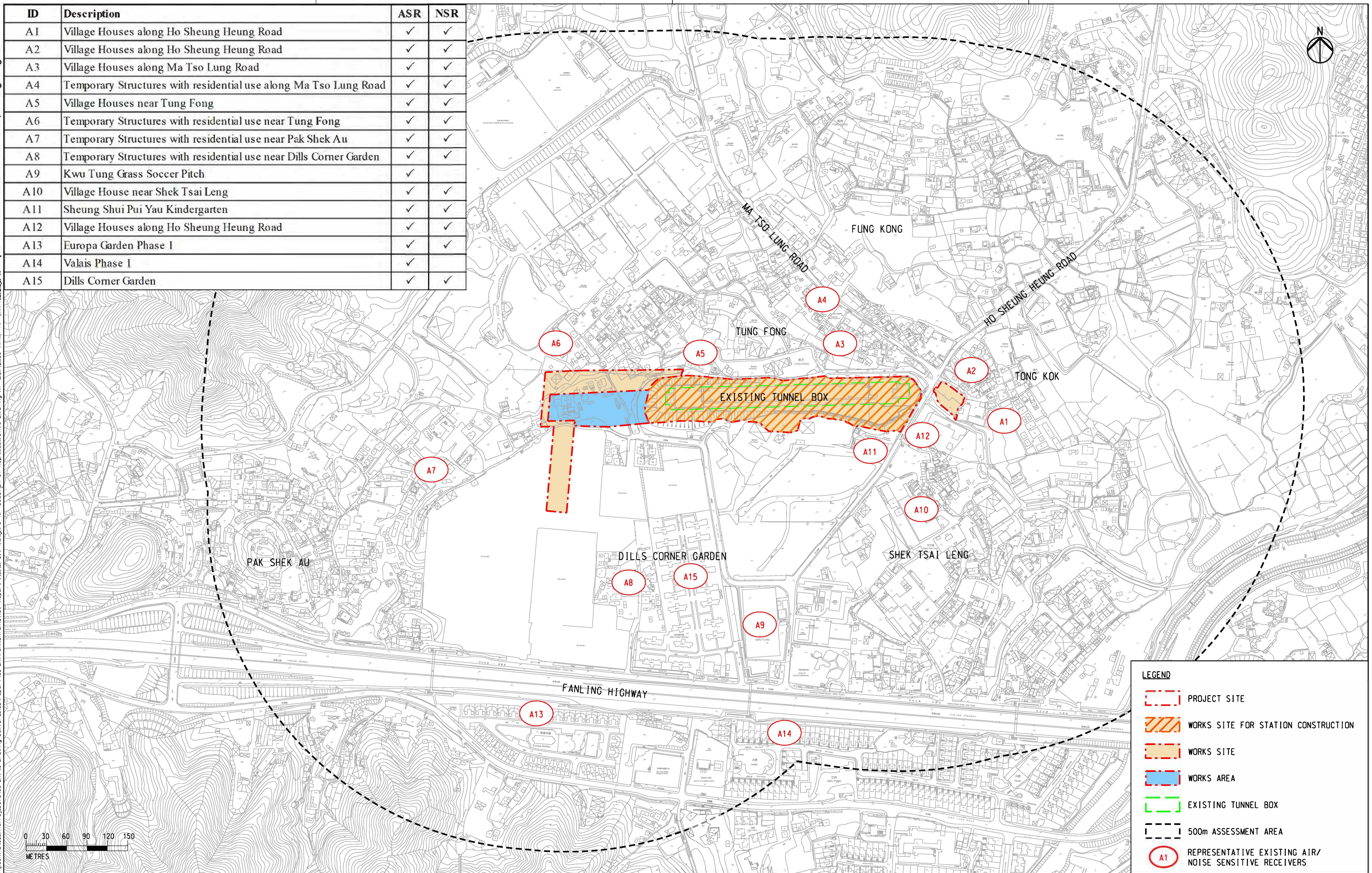
CADD REF. FIGURE 2.1.dgn

TITLE
SHEUNG SHUI TO LOK MA CHAU SPUR LINE
LOCATION OF BASELINE AIR QUALITY MONITORING STATION

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

PLOT DRV: g:\common\microstation standard\plotdrv\hp_aruphk_a3-pdf-c_env.plt
MODELNAME: $MODEL$ PRINTED BY: HKGTRA014 2/10/2023 10:24:29 AM
FILENAME: \\global.arup.com\EastAsia\HKG\Projects\281000\281521-00 C160 KTU\05_Int_Proj_Data\08 Env\13 Drawing Deliverables\report\22 Baseline Monitoring Report\FIGURE 2i.dgn

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 Corner Garden	✓	✓



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

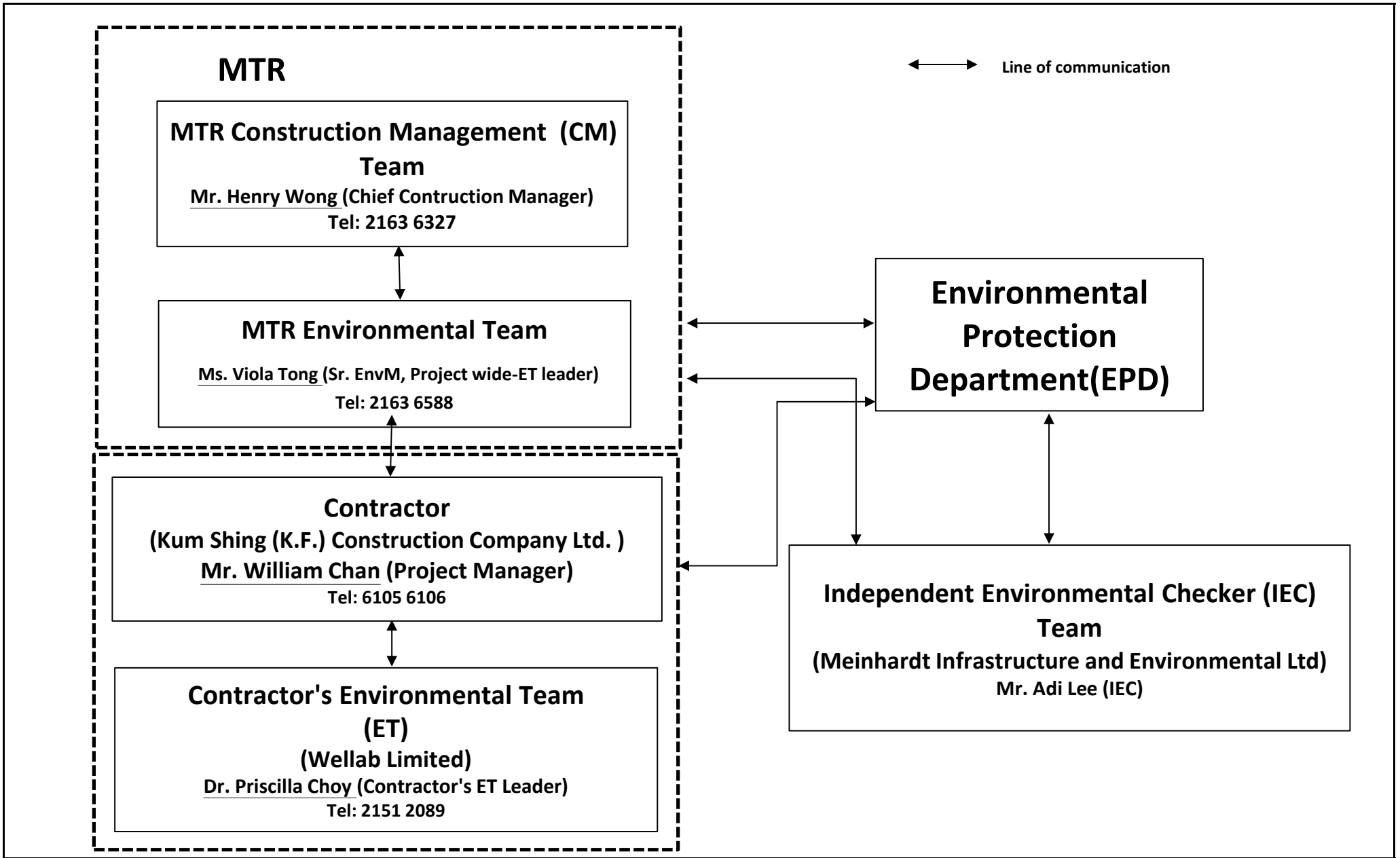
ORIGINATOR: ARUP

Supported by : Arcadis Hong Kong Ltd.

CADD REF. Figure 7.1 - 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 EXISTING AIR AND NOISE SENSITIVE RECEIVERS

SCALE 1 : 5000 (A3) | DRAWING NO. FIGURE 2b | REV. B



Title	Contract 1633 - Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works Project Organisation for Environmental Works	Scale N.T.S Date Oct-23	Project No. WMA22014 Figure 3

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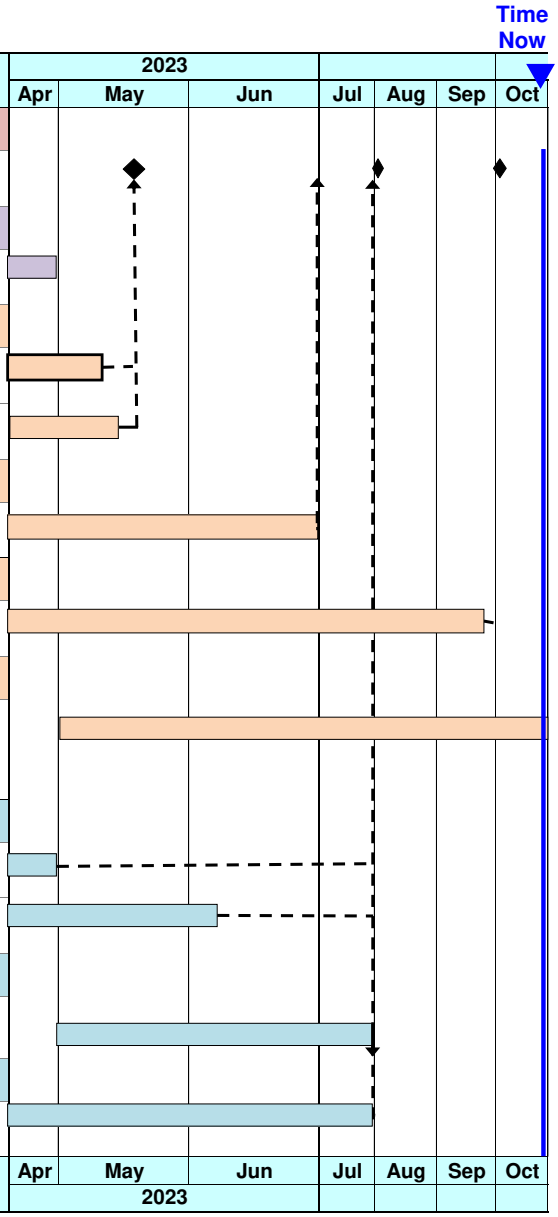
APPENDIX A
CONSTRUCTION PROGRAMME

1633 Alteration and Addition Works at Kwu Tung for East Rail Line Protection
Contract Summary Programme

Item	Activity Description
1.0	Key Milestones
1.3	1633 Key Dates
2.0	Edoc & Design Approval
2.0.2	EDOC, Method Statement Approval and BD Amendment
2.1	Emergency Access Point
2.1.1	Existing Earthing/Lightning Detection and Diversion for EAP3 & EAP4
2.1.2	EAP3 & EAP4 Steel Deck Installation
2.2	Instrumentation and Monitoring
2.2.1	Automatic Deformation and Monitoring System (ADMS) Installation
2.3	Cable Diversion
2.3.1	Cable bracket installation and cable shifting
2.4	Tunnel Evacuation Walkway
2.4.1	Install Steel Evacuation Walkway Deck, Fire Hydrant & Fire Mains,Site preparation for main prefabricated units of tunnel walkway
2.5	Tree Felling and Transplanting
2.5.1	Tree Felling
2.5.2	Tree Transplanting for EVA Hammerhead
2.6	EVA Hammerhead & Fencing Removal
2.6.1	EVA Hammerhead Works, Partial Removal of Existing Steel Bar Fencing
2.7	UU Installation for Detention Pond Decommissioning
2.7.1	UU Installation for Detention Pond Decommissioning



LEGEND:

HOARDING/FENCING (INDICATIVE ONLY) AND THE EXACT POSITION SHALL BE AGREED WITH PROJECT MANAGER ON SITE

GATES (INDICATIVE ONLY) AND THE EXACT POSITION SHALL BE AGREED WITH PROJECT MANAGER ON SITE

① SITE INGRESS/EGRESS FOR WORKS AREAS AND THE EXACT POSITION SHALL BE AGREED WITH PROJECT MANAGER ON SITE

UU Installation for Detention Pond Decommissioning (Aboveground)

New Cable Bracket Installation and Cable shifting (Defect rectification);
Site preparation for main pre-fabricated units of tunnel walkway;
Install Steel Evacuation Walkway Deck, Fire Hydrant & Fire Mains (Underground)

MA TSO LUNG ROAD

HO SHEUNG HEUNG ROAD

PO LAU TSUEN ROAD

Open Storage

TUNG FONG

東方

1633.M1

1633.M2

①

Sheung Shui Pui Yau Kindergarten

Shek Tsai Leng

0 10 20 30 40 50
METRES
1 : 1000

REV	DESCRIPTION	BY	DATE	APPROVED
A	FIRST ISSUE	JH	AUG 22	DN

DRAWN	PKN
DESIGNED	JH
CHECKED	JH
APPROVED	DN
DATE	23/AUG/2022

MTR

KWU TUNG STATION (EAL)

ORIGINATOR
CAPITAL WORKS BUSINESS UNIT | LAND ADMINISTRATION SECTION

CADD REF.
1633_t_000_pld_p08_001a.dgn

TITLE
CONTRACT 1633
LOCATION OF WORKS
OCTOBER 2023

SCALE 1 : 1000 (A1)
DRAWING NO. 1633/T/000/PLD/P08/001
REV. A

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PRINTED BY: PKNG
6/23/2022 5:01:35 PM

APPENDIX B
ACTION AND LIMIT LEVELS

Appendix B - Action and Limit Levels

Table B-1 Action and Limit Levels for 1-hour TSP

Monitoring station	Action Level (ug/m^3)	Limit Level (ug/m^3)
CD1a	275	500
CD2a	279	
CD3a	279	
CD4a	281	
CD5a	280	

Table B-2 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) *

Noted:
If works are to be carried during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.
(*) reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

APPENDIX C
COPIES OF CALIBRATION CERTIFCATES

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WELLAB LIMITED
Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	38946
Date of Issue:	2023-09-11
Date Received:	2023-09-09
Date Tested:	2023-09-09
Date Completed:	2023-09-11
Next Due Date:	2023-11-10
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X23807
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-01

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.115

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

TSP - Total Suspended Particulates (1 hr Dust Meter) Calibration Report

Dust Meter	Dust Meter	High Volume Sampler
Equipment No.:	WA-01-01	WA-12-09
Model No. :	AEROCET-831	TE-5170
Serial No.	X23807	2203
Calibration Date:	9-Sep-23	9-Sep-23
Location:	Wellab Office (Calibration Room)	

Calibration of 1 hr TSP		
Calibration Point	**Dust Meter** Mass Concentration (μg/m³) **X-axis**	**HVS** Mass concentration (μg/m³) **Y-axis**
1	34	40
2	50	59
3	67	74
4	81	91
5	100	106
Average	**66.5**	**74.1**

By Linear Regression of Y on X

Slope , mw = 1.0075 **Intercept, bw =** **7.1406**

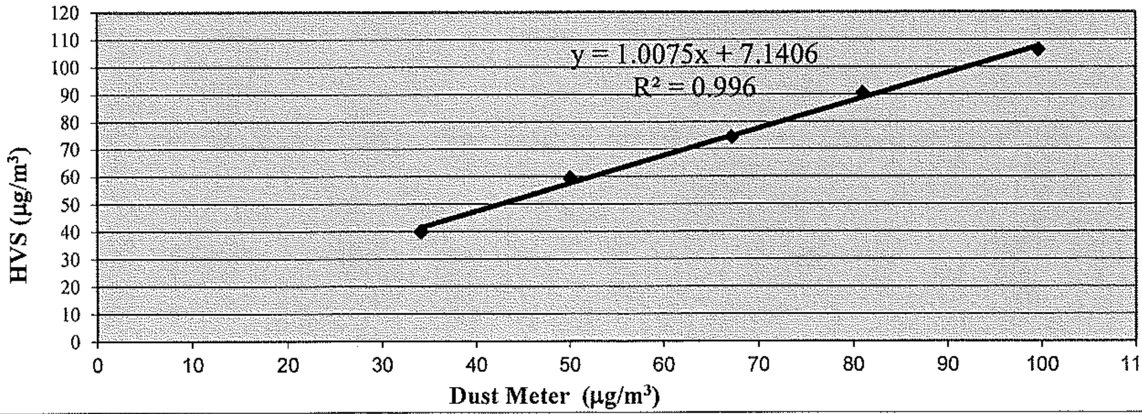
Correlation coefficient* = **0.9980**

*If Correlation Coefficient < 0.90, check and recalibrate.

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (μg/m³)	74.1
Particaulate Concentration by Dust Meter (μg/m³)	66.5
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (μg/m³)] **1.115**



QC Reviewer: Lik Mpn Hhv Signature: hei Date: 9/9/23

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WELLAB LIMITED
Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	38946B
Date of Issue:	2023-09-11
Date Received:	2023-09-09
Date Tested:	2023-09-09
Date Completed:	2023-09-11
Next Due Date:	2023-11-10
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X23809
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-03

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.147

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

TSP - Total Suspended Particulates (1 hr Dust Meter)
Calibration Report

Dust Meter	Dust Meter	High Volume Sampler
Equipment No.:	WA-01-03	WA-12-09
Model No. :	AEROCET-831	TE-5170
Serial No.	X23809	2203
Calibration Date:	9-Sep-23	9-Sep-23
Location:	Wellab Office (Calibration Room)	

Calibration of 1 hr TSP		
	Dust Meter	**HVS**
Calibration Point	Mass Concentration (µg/m^3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	31	40
2	48	59
3	67	74
4	82	91
5	95	106
Average	**64.6**	**74.1**

By Linear Regression of Y on X

Slope , mw = **1.0068** **Intercept, bw =** **9.0804**

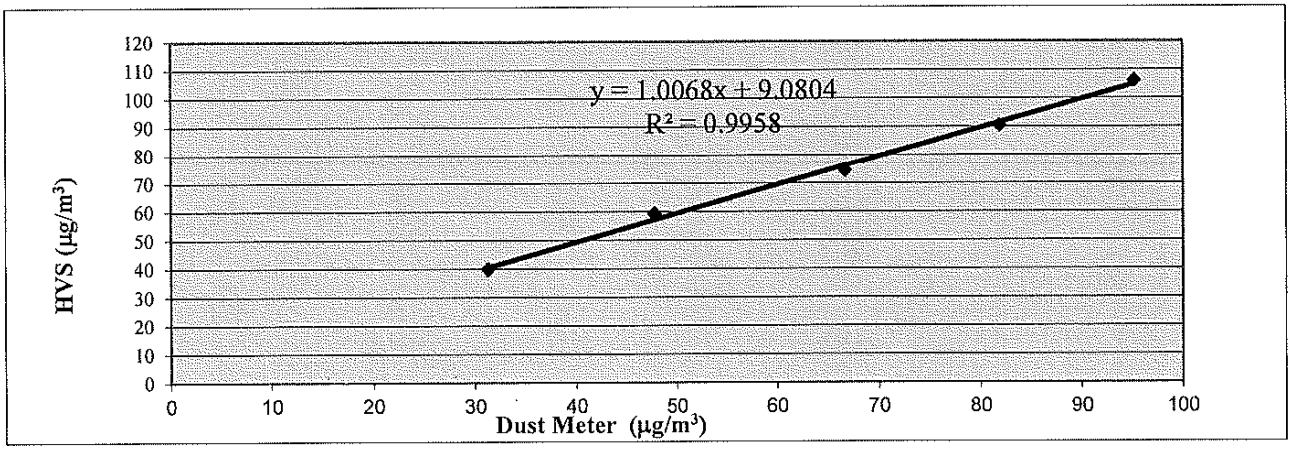
Correlation coefficient* = **0.9979**

*If Correlation Coefficient < 0.90, check and recalibrate.

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	74.1
Particaulate Concentration by Dust Meter (µg/m^3)	64.6
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m^3)] **1.147**



QC Reviewer: MN MN MN Signature: [signature] Date: 9/9/23

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WELLAB LIMITED
Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	38751
Date of Issue:	2023-08-24
Date Received:	2023-08-23
Date Tested:	2023-08-23
Date Completed:	2023-08-24
Next Due Date:	2023-10-23
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X24476
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-05

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.093

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

TSP - Total Suspended Particulates (1 hr Dust Meter)
Calibration Report

Dust Meter	Dust Meter	High Volume Sampler
Equipment No.:	WA-01-05	WA-12-09
Model No. :	AEROCET-831	TE-5170
Serial No.	X24476	2203
Calibration Date:	23-Aug-23	23-Aug-23
Location:	Wellab Office (Calibration Room)	

Calibration of 1 hr TSP		
	Dust Meter	**HVS**
Calibration Point	Mass Concentration ($\mu g/m^3$) **X-axis**	Mass concentration ($\mu g/m^3$) **Y-axis**
1	16	19
2	31	36
3	55	60
4	70	77
5	93	97
Average	**53.0**	**57.9**

By Linear Regression of Y on X

Slope , mw = **1.0138** **Intercept, bw =** **4.2068**

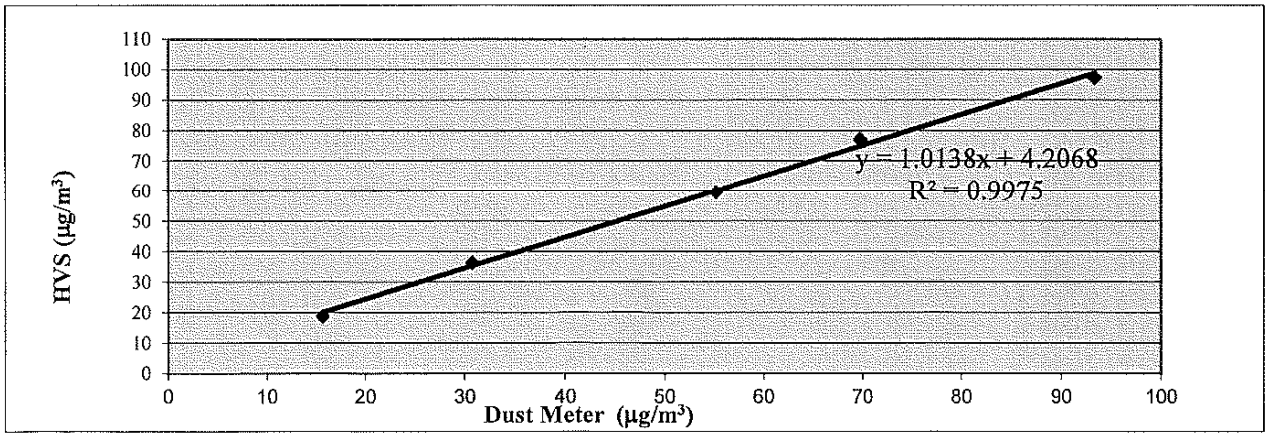
Correlation coefficient* = **0.9987**

*If Correlation Coefficient < 0.90, check and recalibrate.

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler ($\mu g/m^3$)	57.9
Particaulate Concentration by Dust Meter ($\mu g/m^3$)	53.0
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, ($\mu g/m^3$)] **1.093**



QC Reviewer: MAN Signature: Date: 24/8/23

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Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	39078A
Date of Issue:	2023-10-24
Date Received:	2023-10-21
Date Tested:	2023-10-21
Date Completed:	2023-10-24
Next Due Date:	2023-12-23
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X24477
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-06

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.117

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

TSP - Total Suspended Particulates (1 hr Dust Meter)
Calibration Report

Dust Meter	Dust Meter	High Volume Sampler
Equipment No.:	WA-01-06	WA-12-09
Model No. :	AEROCET-831	TE-5170
Serial No.	X24477	2203
Calibration Date:	21-Oct-23	21-Oct-23
Location:	Wellab Office (Calibration Room)	

Calibration of 1 hr TSP		
	Dust Meter	**HVS**
Calibration Point	Mass Concentration (µg/m^3) **X-axis**	Mass concentration (µg/m^3) **Y-axis**
1	14	20
2	30	38
3	53	58
4	68	72
5	88	94
Average	**50.6**	**56.5**

By Linear Regression of Y on X

Slope , mw = **0.9750** **Intercept, bw =** **7.2044**

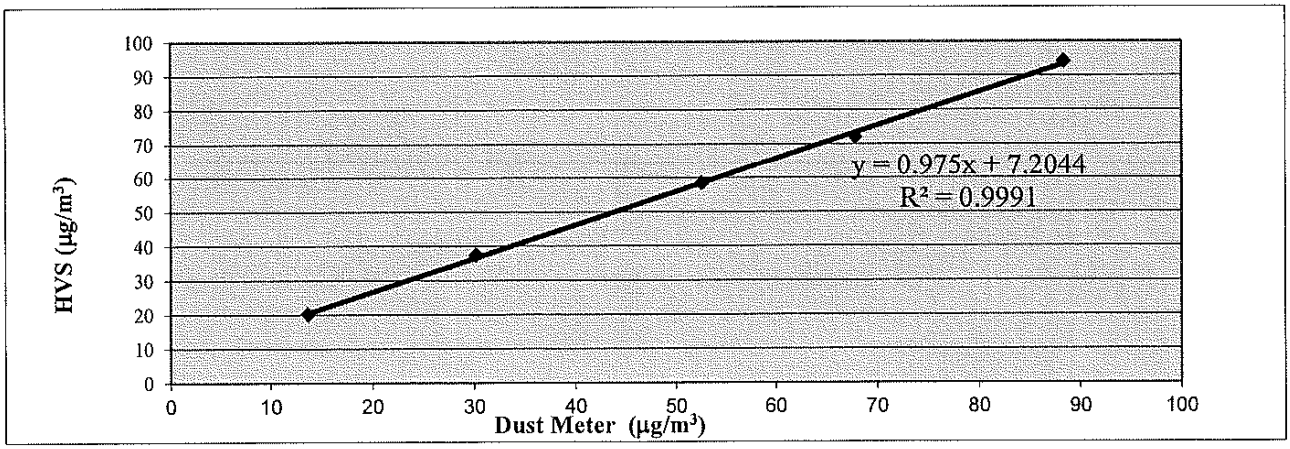
Correlation coefficient* = **0.9995**

*If Correlation Coefficient < 0.90, check and recalibrate.

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (µg/m^3)	56.5
Particaulate Concentration by Dust Meter (µg/m^3)	50.6
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (µg/m^3)] **1.117**



QC Reviewer: Lee Mun Hin Signature: hi Date: 21/10/23

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WELLAB LIMITED
Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	38946D
Date of Issue:	2023-09-11
Date Received:	2023-09-09
Date Tested:	2023-09-09
Date Completed:	2023-09-11
Next Due Date:	2023-11-10
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X24475
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-07

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.087

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

TSP - Total Suspended Particulates (1 hr Dust Meter)
Calibration Report

Dust Meter	Dust Meter	High Volume Sampler
Equipment No.:	WA-01-07	WA-12-09
Model No. :	AEROCET-831	TE-5170
Serial No.	X24475	2203
Calibration Date:	9-Sep-23	9-Sep-23
Location:	Wellab Office (Calibration Room)	

Calibration of 1 hr TSP		
Calibration Point	**Dust Meter** Mass Concentration ($\mu g/m^3$) **X-axis**	**HVS** Mass concentration ($\mu g/m^3$) **Y-axis**
1	36	40
2	54	59
3	67	74
4	85	91
5	100	106
Average	**68.2**	**74.1**

By Linear Regression of Y on X

Slope , mw = **1.0359** **Intercept, bw =** **3.4741**

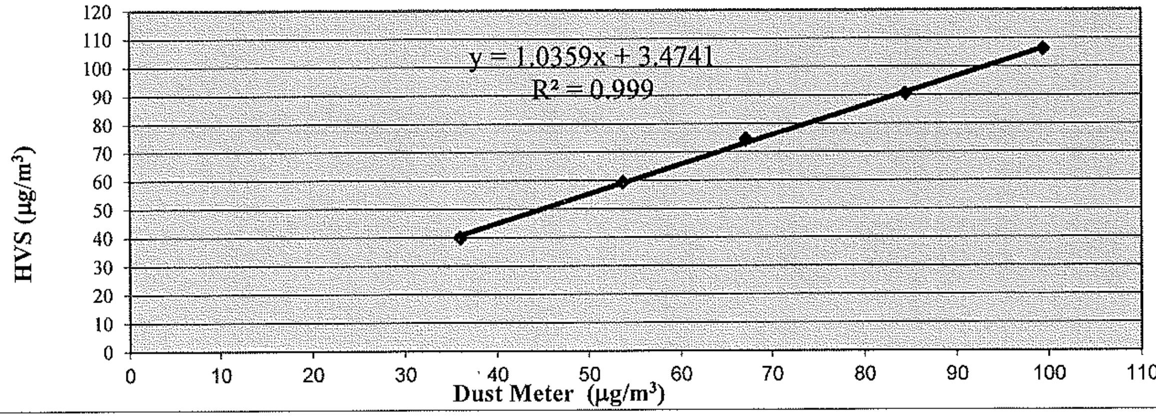
Correlation coefficient* = **0.9995**

*If Correlation Coefficient < 0.90, check and recalibrate.

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler ($\mu g/m^3$)	74.1
Particaulate Concentration by Dust Meter ($\mu g/m^3$)	68.2
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, ($\mu g/m^3$)] **1.087**



QC Reviewer: Lee Man Hei Signature: hei Date: 9/9/23

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WELLAB LIMITED
Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	38751B
Date of Issue:	2023-08-24
Date Received:	2023-08-23
Date Tested:	2023-08-23
Date Completed:	2023-08-24
Next Due Date:	2023-10-23
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X24479
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-08

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.137

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

TSP - Total Suspended Particulates (1 hr Dust Meter)
Calibration Report

Dust Meter	Dust Meter	High Volume Sampler
Equipment No.:	WA-01-08	WA-12-09
Model No. :	AEROCET-831	TE-5170
Serial No.	X24479	2203
Calibration Date:	23-Aug-23	23-Aug-23
Location:	Wellab Office (Calibration Room)	

Calibration of 1 hr TSP		
Calibration Point	**Dust Meter** Mass Concentration ($\mu g/m^3$) **X-axis**	**HVS** Mass concentration ($\mu g/m^3$) **Y-axis**
1	12	19
2	29	36
3	54	60
4	69	77
5	91	97
Average	**51.0**	**57.9**

By Linear Regression of Y on X

Slope , mw = **0.9943** **Intercept, bw =** **7.2488**

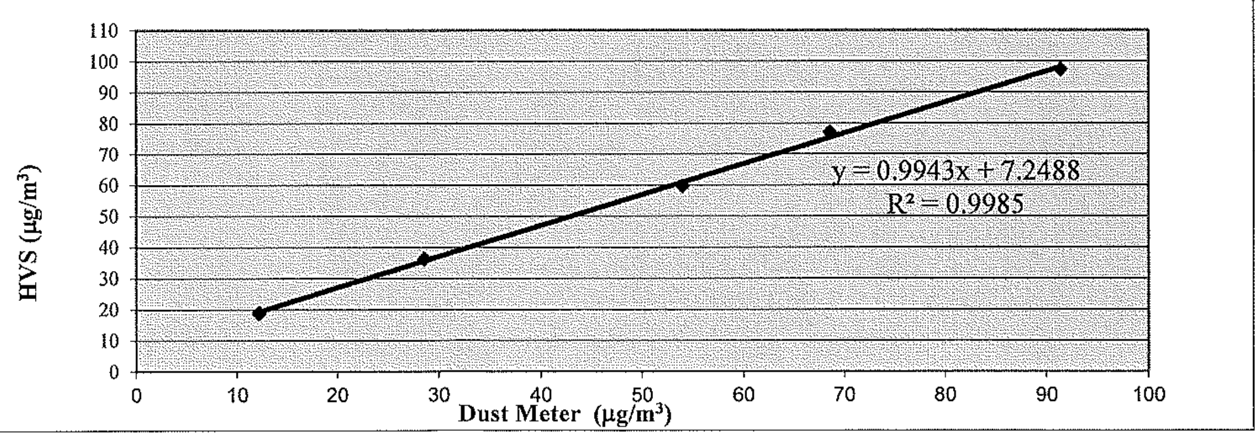
Correlation coefficient* = **0.9993**

*If Correlation Coefficient < 0.90, check and recalibrate.

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler ($\mu g/m^3$)	57.9
Particaulate Concentration by Dust Meter ($\mu g/m^3$)	51.0
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, ($\mu g/m^3$)] **1.137**



QC Reviewer: LEE MAN MEI Signature: [signature] Date: 24/8/23

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WELLAB LIMITED
Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	38751C
Date of Issue:	2023-08-24
Date Received:	2023-08-23
Date Tested:	2023-08-23
Date Completed:	2023-08-24
Next Due Date:	2023-10-23
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X23811
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-09

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.099

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

TSP - Total Suspended Particulates (1 hr Dust Meter) Calibration Report

Dust Meter	Dust Meter	High Volume Sampler
Equipment No.:	WA-01-09	WA-12-09
Model No. :	AEROCET-831	TE-5170
Serial No.	X23811	2203
Calibration Date:	23-Aug-23	23-Aug-23
Location:	Wellab Office (Calibration Room)	

Calibration of 1 hr TSP		
Calibration Point	**Dust Meter** Mass Concentration ($\mu g/m^3$) **X-axis**	**HVS** Mass concentration ($\mu g/m^3$) **Y-axis**
1	13	19
2	28	36
3	57	60
4	72	77
5	94	97
Average	**52.7**	**57.9**

By Linear Regression of Y on X

Slope , mw = **0.9598** **Intercept, bw =** **7.3214**

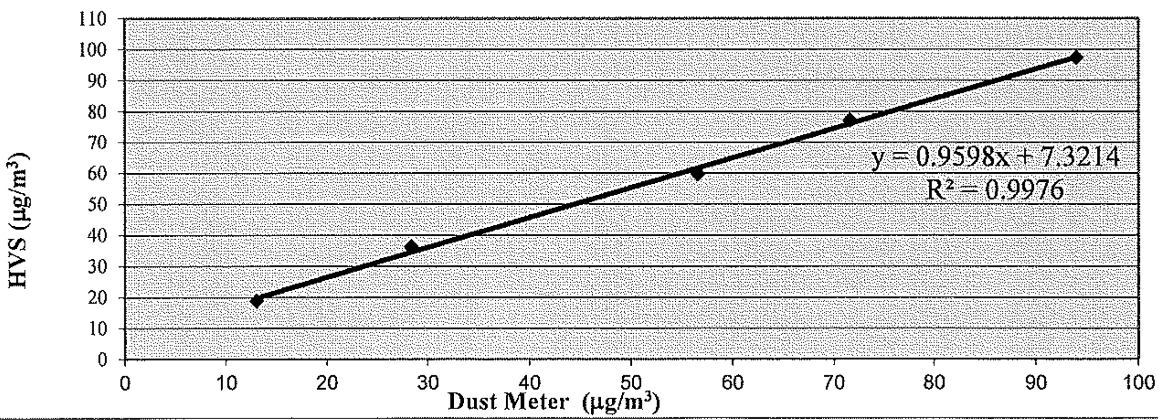
Correlation coefficient* = **0.9988**

*If Correlation Coefficient < 0.90, check and recalibrate.

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler ($\mu g/m^3$)	57.9
Particaulate Concentration by Dust Meter ($\mu g/m^3$)	52.7
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, ($\mu g/m^3$)] **1.099**



QC Reviewer: Lee Man Hei Signature: [signature] Date: 24/8/23

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WELLAB LIMITED
Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	39078C
Date of Issue:	2023-10-24
Date Received:	2023-10-21
Date Tested:	2023-10-21
Date Completed:	2023-10-24
Next Due Date:	2023-12-23
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X23811
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-09

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.133

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

TSP - Total Suspended Particulates (1 hr Dust Meter)
Calibration Report

Dust Meter	Dust Meter	High Volume Sampler
Equipment No.:	WA-01-09	WA-12-09
Model No. :	AEROCET-831	TE-5170
Serial No.	X23811	2203
Calibration Date:	21-Oct-23	21-Oct-23
Location:	Wellab Office (Calibration Room)	

Calibration of 1 hr TSP		
Calibration Point	**Dust Meter** Mass Concentration ($\mu g/m^3$) **X-axis**	**HVS** Mass concentration ($\mu g/m^3$) **Y-axis**
1	14	20
2	34	38
3	52	58
4	63	72
5	86	94
Average	**49.9**	**56.5**

By Linear Regression of Y on X

Slope , mw = **1.0350** **Intercept, bw =** **4.8751**

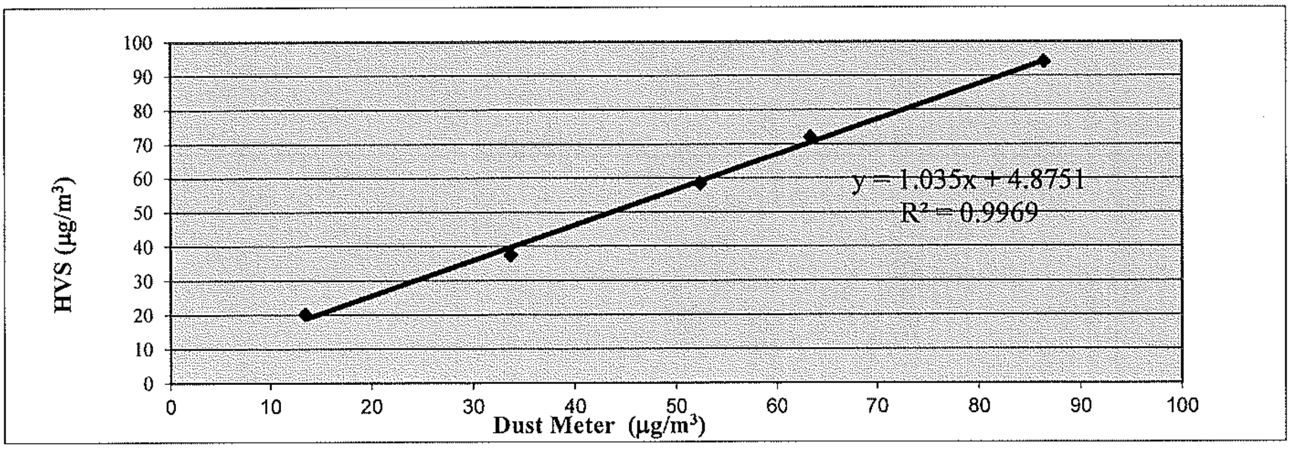
Correlation coefficient* = **0.9985**

*If Correlation Coefficient < 0.90, check and recalibrate.

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler ($\mu g/m^3$)	56.5
Particaulate Concentration by Dust Meter ($\mu g/m^3$)	49.9
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, ($\mu g/m^3$)] **1.133**



QC Reviewer: LEE MAN HEI Signature: hei Date: 21/10/23

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WELLAB LIMITED
Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	38751Ds
Date of Issue:	2023-08-24
Date Received:	2023-08-23
Date Tested:	2023-08-23
Date Completed:	2023-08-24
Next Due Date:	2023-10-23
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X24478
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-10

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

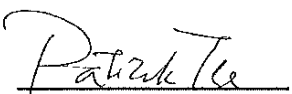
1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.179

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**



PATRICK TSE
General Manager

TSP - Total Suspended Particulates (1 hr Dust Meter) Calibration Report

Dust Meter	Dust Meter	High Volume Sampler
Equipment No.:	WA-01-10	WA-12-09
Model No. :	AEROCET-831	TE-5170
Serial No.	X24478	2203
Calibration Date:	23-Aug-23	23-Aug-23
Location:	Wellab Office (Calibration Room)	

Calibration of 1 hr TSP		
Calibration Point	**Dust Meter** Mass Concentration ($\mu g/m^3$) **X-axis**	**HVS** Mass concentration ($\mu g/m^3$) **Y-axis**
1	14	19
2	26	36
3	51	60
4	68	77
5	86	97
Average	**49.1**	**57.9**

By Linear Regression of Y on X

Slope , mw = 1.0553 **Intercept, bw = 6.0835**

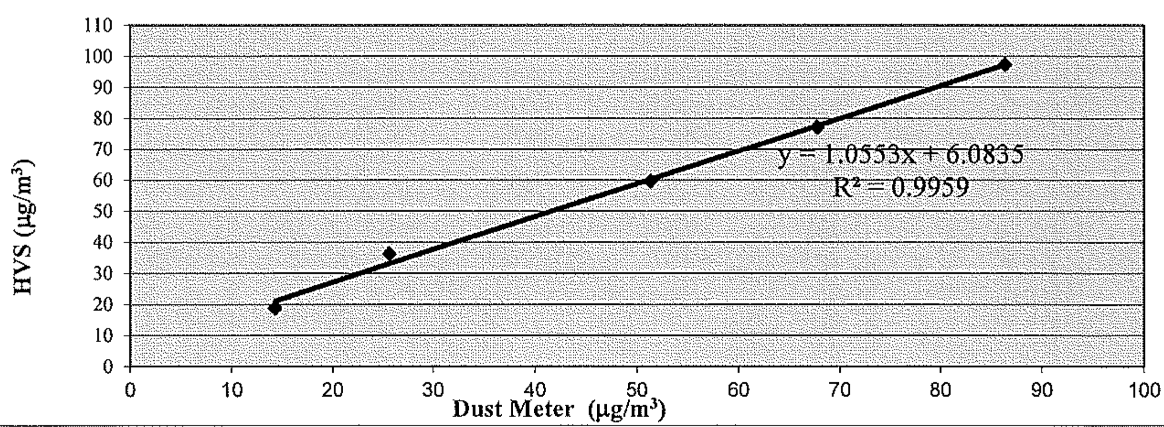
Correlation coefficient* = 0.9980

*If Correlation Coefficient < 0.90, check and recalibrate.

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler ($\mu g/m^3$)	57.9
Particaulate Concentration by Dust Meter ($\mu g/m^3$)	49.1
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, ($\mu g/m^3$)] **1.179**



QC Reviewer: LEE MAN KIT Signature: hei Date: 24/8/23

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WELLAB LIMITED
Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	39078D
Date of Issue:	2023-10-24
Date Received:	2023-10-21
Date Tested:	2023-10-21
Date Completed:	2023-10-24
Next Due Date:	2023-12-23
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X24478
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-10

Test Conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.139

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

TSP - Total Suspended Particulates (1 hr Dust Meter) Calibration Report

Dust Meter	Dust Meter	High Volume Sampler
Equipment No.:	WA-01-10	WA-12-09
Model No. :	AEROCET-831	TE-5170
Serial No.	X24478	2203
Calibration Date:	21-Oct-23	21-Oct-23
Location:	Wellab Office (Calibration Room)	

Calibration of 1 hr TSP		
Calibration Point	**Dust Meter** Mass Concentration (μg/m^3) **X-axis**	**HVS** Mass concentration (μg/m^3) **Y-axis**
1	16	20
2	31	38
3	51	58
4	67	72
5	84	94
Average	**49.6**	**56.5**

By Linear Regression of Y on X

Slope , mw = 1.0490 **Intercept, bw = 4.4685**

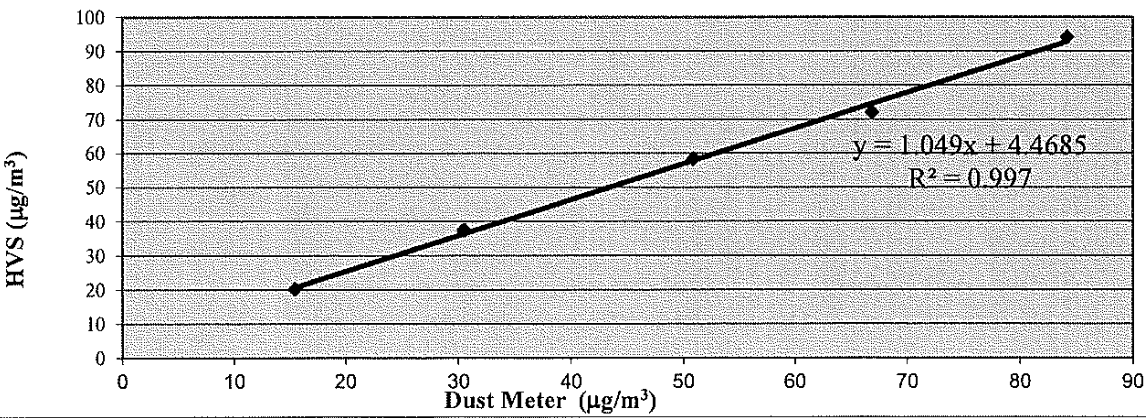
Correlation coefficient* = 0.9985

*If Correlation Coefficient < 0.90, check and recalibrate.

Set Correlation Factor	
Particaulate Concentration by High Volume Sampler (μg/m^3)	56.5
Particaulate Concentration by Dust Meter (μg/m^3)	49.6
Measureing time, (min)	60

Set Correlation Factor , SCF

SCF = [K=High Volume Sampler / Dust Meter, (μg/m^3)] 1.139



QC Reviewer: Lee Man Hin Signature: [signature] Date: 21/10/23

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High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. Cal./230823

Equipment No.: WA-12-09 Serial No. 2203

Model No. TE-5170 Cal. Date: 23-Aug-23

Operator: HL

Ambient Condition			
Temperature, Ta (K)	293.6	Pressure, Pa (mmHg)	757.4

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0574	Intercept, bc	-0.04292
Last Calibration Date:	16-Jan-23	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	16-Jan-24	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.4	3.40	59.86	7.4	2.74
2	9.9	3.16	55.84	6.3	2.52
3	8.6	2.95	52.09	5.5	2.36
4	5.9	2.44	43.28	4.0	2.01
5	4.0	2.01	35.77	2.6	1.62

By Linear Regression of Y on X

Slope , mw = **0.0450** **Intercept, bw =** **0.0290**

Correlation coefficient* = **0.9986**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.81**

Remarks:

Conducted by: LEE MAN HEI Signature: Date: 23/8/2023

Checked by: Ho Ka Chun Signature: Date: 23/8/2023

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High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

File No. Cal./230909

Equipment No.: WA-12-09 | Serial No. 2203
Model No. TE-5170 | Cal. Date: 9-Sep-23
Operator: HL

Ambient Condition			
Temperature, Ta (K)	293	Pressure, Pa (mmHg)	758.6

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0574	Intercept, bc	-0.04292
Last Calibration Date:	16-Jan-23	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	16-Jan-24	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler					
Calibration Point	**Orfice**			**HVS**	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	11.0	3.34	58.92	7.6	2.78
2	9.6	3.12	55.10	6.5	2.57
3	8.5	2.94	51.89	5.7	2.41
4	6.0	2.47	43.71	4.2	2.06
5	3.8	1.96	34.94	2.7	1.66

By Linear Regression of Y on X

Slope , mw = 0.0460 **Intercept, bw : 0.0466**

Correlation coefficient* = 0.9991

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

mw x Qstd + bw = [ΔW x (Pa/760) x (298/Ta)]$^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.03**

Remarks:

Conducted by: Che Man Hon Signature: [signature] Date: 9/9/2023
Checked by: Ho Ka Chun Signature: [signature] Date: 9/9/2023

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High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. Cal./231021

Equipment No.: WA-12-09 Serial No. 2203

Model No. TE-5170 Cal. Date: 21-Oct-23

Operator: HL

Ambient Condition			
Temperature, Ta (K)	293.6	Pressure, Pa (mmHg)	764.7

Orifice Transfer Standard Information					
Serial No.	0993	Slope, mc	0.0574	Intercept, bc	-0.04292
Last Calibration Date:	16-Jan-23	**mc x Qstd + bc = $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$**			
Next Calibration Date:	16-Jan-24	**Qstd = $\{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.7	3.46	60.93	8.0	2.86
2	9.7	3.15	55.54	6.6	2.60
3	8.4	2.93	51.74	5.8	2.43
4	6.5	2.58	45.60	4.5	2.14
5	3.9	2.00	35.49	2.8	1.69

By Linear Regression of Y on X

Slope , mw = 0.0458 **Intercept, bw =** 0.0619

Correlation coefficient* = 0.9999

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **4.04**

Remarks:

Conducted by: Signature: Date: 21/10/2023

Checked by: Signature: Date: 21/10/23

TISCH Environmental

RECALIBRATION DUE DATE:
January 16, 2024

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	January 16, 2023	**Rootsmeter S/N:** 438320	**Ta:** 293	°K
Operator:	Jim Tisch		**Pa:** 749.0	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **0993**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3860	3.2	2.00
2	3	4	1	0.9880	6.4	4.00
3	5	6	1	0.8810	8.0	5.00
4	7	8	1	0.8410	8.8	5.50
5	9	10	1	0.6950	12.8	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9981	0.7201	1.4159	0.9957	0.7184	0.8845
0.9938	1.0059	2.0024	0.9915	1.0035	1.2509
0.9917	1.1257	2.2388	0.9893	1.1230	1.3985
0.9906	1.1779	2.3480	0.9883	1.1751	1.4668
0.9853	1.4177	2.8318	0.9829	1.4143	1.7690
QSTD	**m=**	**2.02881**	**QA**	**m=**	**1.27041**
	b=	**-0.04292**		**b=**	**-0.02681**
	r=	**0.99998**		**r=**	**0.99998**

Calculations

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

For subsequent flow rate calculations:

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

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

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

RECALIBRATION

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

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

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

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Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	37893B
Date of Issue:	2023-03-06
Date Received:	2023-03-03
Date Tested:	2023-03-03
Date Completed:	2023-03-06
Next Due Date:	2024-03-05
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for calibration:

Description	: Sound Level Meter
Manufacturer	: BSWA
Model No.	: BSWA 308
Serial No.	: 580005
Equipment No.	: WN-01-03

Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse
PATRICK TSE
General Manager

WELLAB 匯力
consulting . testing . research

WELLAB LIMITED
Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	37894
Date of Issue:	2023-03-13
Date Received:	2023-03-10
Date Tested:	2023-03-10
Date Completed:	2023-03-13
Next Due Date:	2024-03-12
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for calibration:

Description	: Sound Level Meter
Manufacturer	: BSWA
Model No.	: BSWA 308
Serial No.	: 580011
Equipment No.	: WN-01-08

Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

WELLAB 匯力
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WELLAB LIMITED
Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	37894A
Date of Issue:	2023-03-13
Date Received:	2023-03-10
Date Tested:	2023-03-10
Date Completed:	2023-03-13
Next Due Date:	2024-03-12
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for calibration:

Description	: Sound Level Meter
Manufacturer	: BSWA
Model No.	: BSWA 308
Serial No.	: 580013
Equipment No.	: WN-01-09

Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

WELLAB 匯力
consulting . testing . research

WELLAB LIMITED
Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	37894B
Date of Issue:	2023-03-13
Date Received:	2023-03-10
Date Tested:	2023-03-10
Date Completed:	2023-03-13
Next Due Date:	2024-03-12
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for calibration:

Description	: Sound Level Meter
Manufacturer	: BSWA
Model No.	: BSWA 308
Serial No.	: 580017
Equipment No.	: WN-01-10

Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

WELLAB 匯力
consulting . testing . research

WELLAB LIMITED
Room 1701, Technology Park,
18 On Lai Street, Shatin,
N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1808, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	38750A
Date of Issue:	2023-08-21
Date Received:	2023-08-18
Date Tested:	2023-08-18
Date Completed:	2023-08-21
Next Due Date:	2024-08-20
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24791
Equipment No.	: N-09-04

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

WELLAB 匯力
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WELLAB LIMITED
Room 1714, Technology Park
18 On Lai Street, Shatin
New Territories, Hong Kong
Tel: 2898 7388 Fax: 2898 7076
Website : www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1801, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	38981A
Date of Issue:	2023-10-03
Date Received:	2023-09-29
Date Tested:	2023-09-29
Date Completed:	2023-10-03
Next Due Date:	2024-10-02
Page:	1 of 1

ATTN: **Ms. Meiling Tang**

Certificate of Calibration

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24780
Equipment No.	: N-09-05

Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

APPENDIX D
ENVIRONMENTAL MONITORING SCHEDULES

Contract 1633 – Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works
Impact Air Quality and Noise Monitoring Schedule (October 2023)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1-Oct	**2-Oct**	3-Oct	4-Oct	5-Oct	6-Oct	7-Oct
			1 hr TSP X3 Noise			
8-Oct	9-Oct	10-Oct	11-Oct	12-Oct	13-Oct	14-Oct
		1 hr TSP X3 Noise				
15-Oct	16-Oct	17-Oct	18-Oct	19-Oct	20-Oct	21-Oct
	1 hr TSP X3 Noise				1 hr TSP X3	
22-Oct	**23-Oct**	24-Oct	25-Oct	26-Oct	27-Oct	28-Oct
				1 hr TSP X3 Noise		
29-Oct	30-Oct	31-Oct				

Air Quality Monitoring Station(s)

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
CD5a - Dills Corner Garden

Noise Monitoring Station(s)

CN1a - Dills Corner Garden

APPENDIX E
AIR QUALITY
MONITORING RESULTS AND
GRAPHICAL PRESENTATION

Appendix E - 1-hour TSP Monitoring Results

Location CD1a - Village Houses along Ma Tso Lung Road			
Date	Time	Weather	Particulate Concentration (μg/m^3)
4-Oct-23	9:00	Cloudy	87.0
4-Oct-23	10:00	Cloudy	79.3
4-Oct-23	11:00	Cloudy	66.7
10-Oct-23	8:30	Cloudy	10.3
10-Oct-23	9:30	Cloudy	10.7
10-Oct-23	10:30	Cloudy	12.6
16-Oct-23	9:00	Cloudy	54.6
16-Oct-23	10:00	Cloudy	45.7
16-Oct-23	11:00	Cloudy	38.7
20-Oct-23	9:00	Cloudy	30.3
20-Oct-23	10:00	Cloudy	36.6
20-Oct-23	11:00	Cloudy	37.7
26-Oct-23	13:00	Sunny	25.4
26-Oct-23	14:00	Sunny	26.1
26-Oct-23	15:00	Sunny	20.4
		Minimum	10.3
		Maximum	87.0
		Average	38.8

Location CD2a - Village Houses near Shek Tsai Leng			
Date	Time	Weather	Particulate Concentration (μg/m³)
4-Oct-23	13:00	Cloudy	92.9
4-Oct-23	14:00	Cloudy	87.4
4-Oct-23	15:00	Cloudy	82.0
10-Oct-23	8:45	Cloudy	31.1
10-Oct-23	9:45	Cloudy	34.4
10-Oct-23	10:45	Cloudy	38.8
16-Oct-23	13:00	Cloudy	44.0
16-Oct-23	14:00	Cloudy	48.5
16-Oct-23	15:00	Cloudy	50.6
20-Oct-23	9:00	Cloudy	33.0
20-Oct-23	10:00	Cloudy	40.2
20-Oct-23	11:00	Cloudy	30.2
26-Oct-23	9:00	Cloudy	41.7
26-Oct-23	10:00	Cloudy	37.4
26-Oct-23	11:00	Cloudy	33.3
		Minimum	30.2
		Maximum	92.9
		Average	48.4

Appendix E - 1-hour TSP Monitoring Results

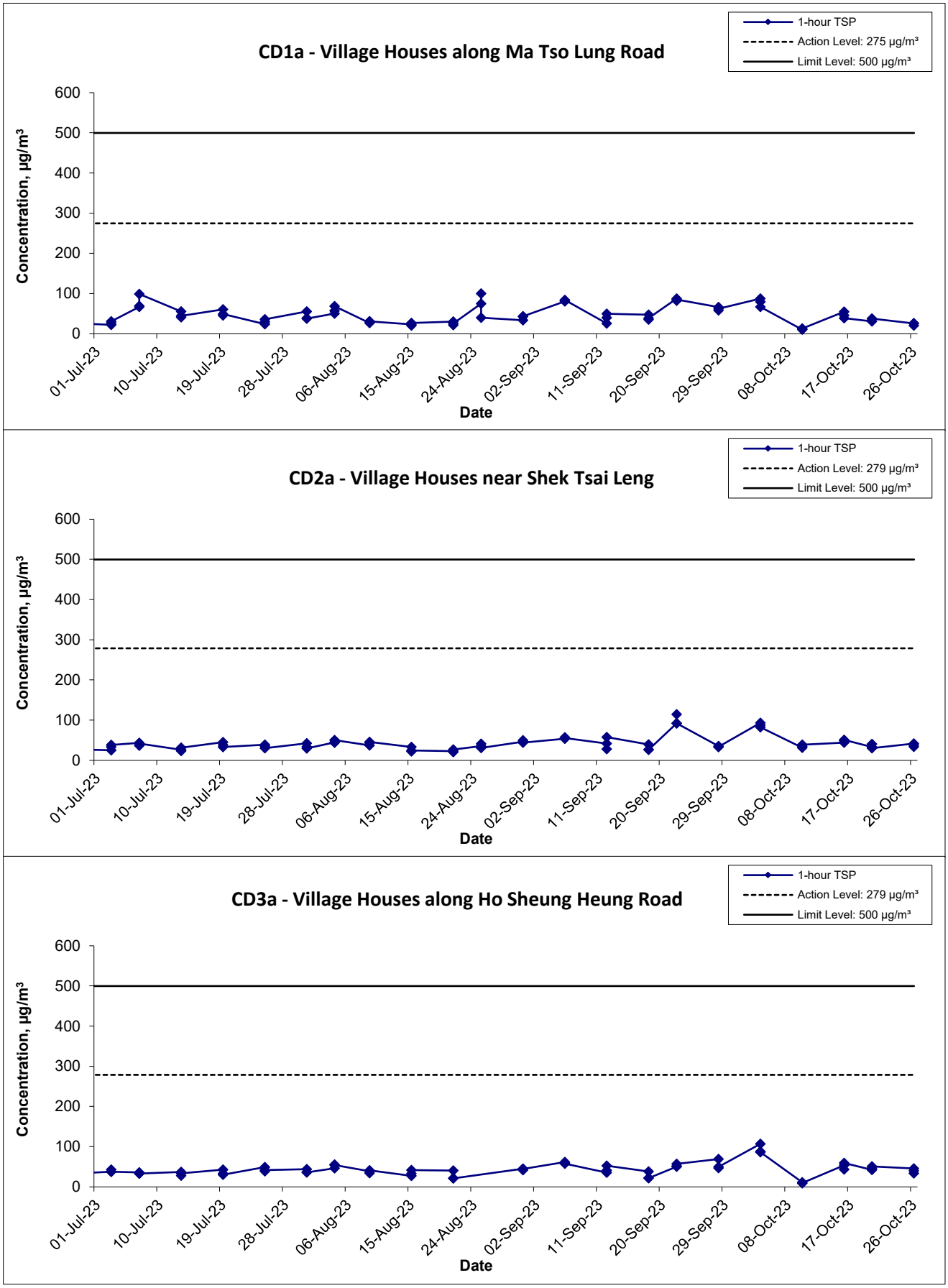
Location CD3a - Village Houses along Ho Sheung Heung Road			
Date	Time	Weather	Particulate Concentration (μg/m³)
4-Oct-23	9:00	Cloudy	106.9
4-Oct-23	10:00	Cloudy	88.0
4-Oct-23	11:00	Cloudy	86.1
10-Oct-23	13:00	Cloudy	11.0
10-Oct-23	14:00	Cloudy	8.9
10-Oct-23	15:00	Cloudy	9.2
16-Oct-23	13:00	Cloudy	53.6
16-Oct-23	14:00	Cloudy	43.1
16-Oct-23	15:00	Cloudy	59.2
20-Oct-23	9:00	Cloudy	42.2
20-Oct-23	10:00	Cloudy	46.0
20-Oct-23	11:00	Cloudy	50.9
26-Oct-23	9:00	Sunny	45.5
26-Oct-23	10:00	Sunny	39.5
26-Oct-23	11:00	Sunny	33.4
		Minimum	8.9
		Maximum	106.9
		Average	48.2

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	Time	Weather	Particulate Concentration (μg/m³)
4-Oct-23	9:00	Cloudy	164.7
4-Oct-23	10:00	Cloudy	116.2
4-Oct-23	11:00	Cloudy	130.8
10-Oct-23	8:50	Cloudy	14.3
10-Oct-23	9:50	Cloudy	20.2
10-Oct-23	10:50	Cloudy	22.3
16-Oct-23	9:00	Cloudy	60.5
16-Oct-23	10:00	Cloudy	58.1
16-Oct-23	11:00	Cloudy	71.1
20-Oct-23	13:00	Cloudy	41.0
20-Oct-23	14:00	Cloudy	50.0
20-Oct-23	15:00	Cloudy	44.3
26-Oct-23	13:00	Sunny	51.7
26-Oct-23	14:00	Sunny	61.7
26-Oct-23	15:00	Sunny	72.4
		Minimum	14.3
		Maximum	164.7
		Average	65.3

Appendix E - 1-hour TSP Monitoring Results

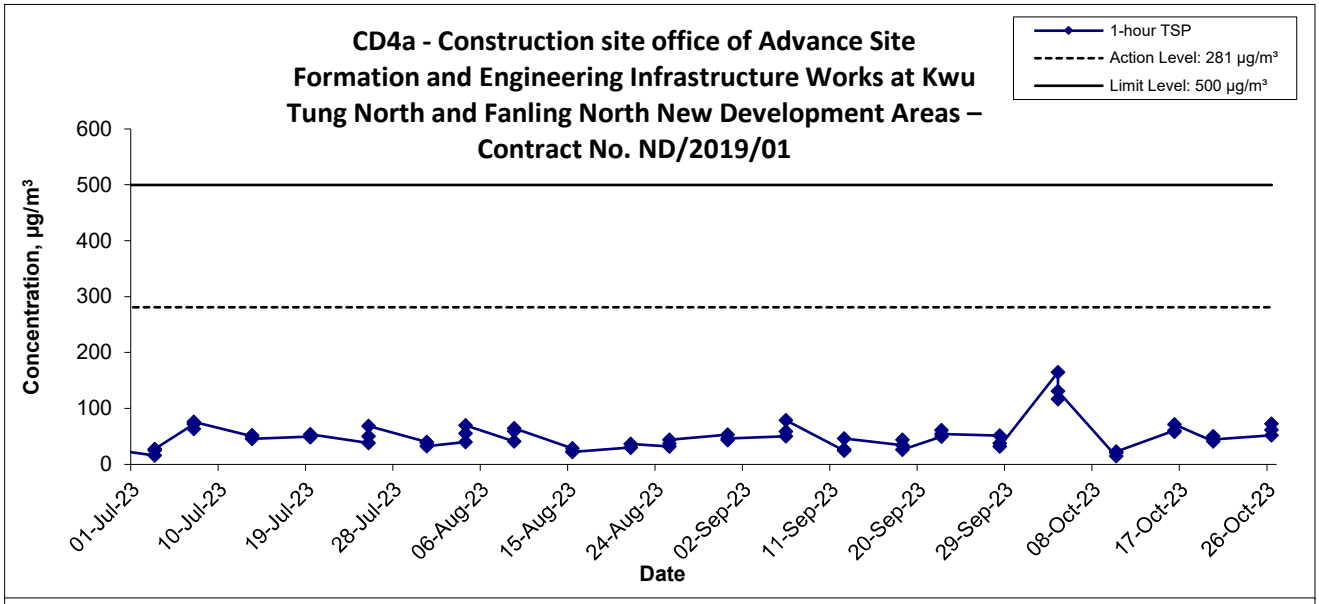
Location CD5a - Dills Corner Garden			
Date	Time	Weather	Particulate Concentration (µg/m³)
4-Oct-23	13:00	Cloudy	111.2
4-Oct-23	14:00	Cloudy	120.4
4-Oct-23	15:00	Cloudy	117.0
10-Oct-23	8:55	Cloudy	45.6
10-Oct-23	9:55	Cloudy	47.9
10-Oct-23	10:55	Cloudy	48.4
16-Oct-23	8:30	Cloudy	94.2
16-Oct-23	9:30	Cloudy	90.5
16-Oct-23	10:30	Cloudy	77.3
20-Oct-23	13:00	Cloudy	44.5
20-Oct-23	14:00	Cloudy	48.2
20-Oct-23	15:00	Cloudy	35.8
26-Oct-23	9:00	Cloudy	72.3
26-Oct-23	10:00	Cloudy	78.3
26-Oct-23	11:00	Cloudy	79.6
		Minimum	35.8
		Maximum	120.4
		Average	74.1

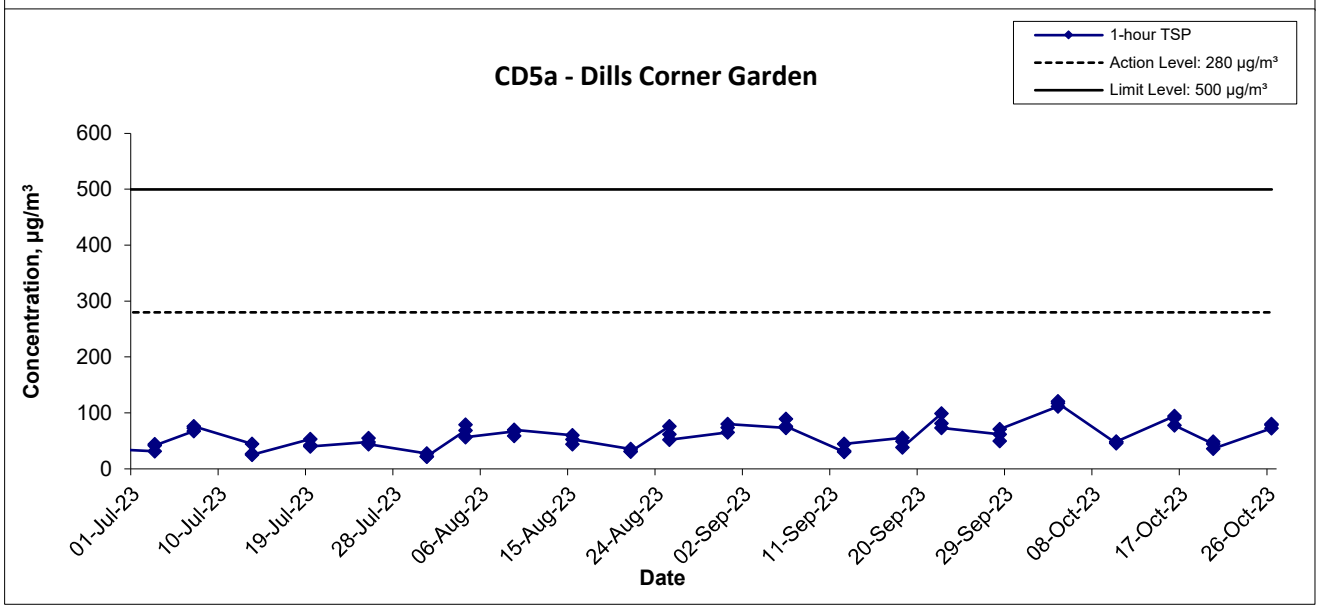
1-hr TSP Concentration Levels



Title: Contract 1633 – Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S	Project No.: WMA22014	WELLAB 匯力 consulting . testing . research
	Date: Oct 23	Appendix: E	

1-hr TSP Concentration Levels





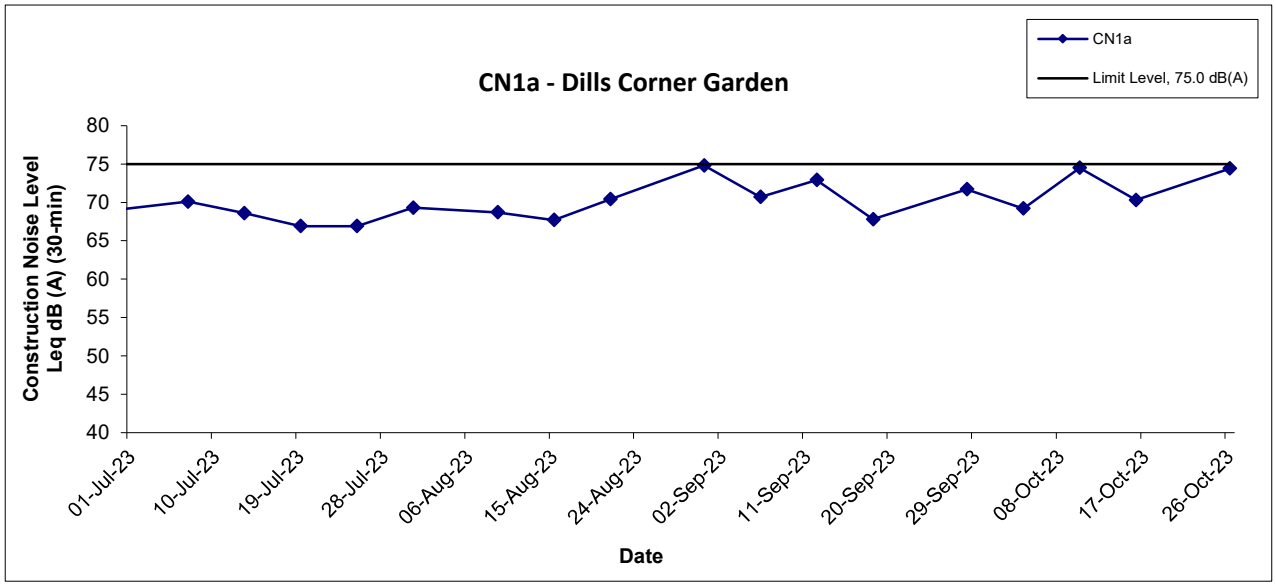
Title: Contract 1633 – Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S	Project No.: WMA22014	WELLAB 匯力 consulting . testing . research
	Date: Oct 23	Appendix: E	

APPENDIX F
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix F - Noise Monitoring Results

Location CN1a - Dills Corner Garden						
Date	Weather	Time	Unit: dB (A) (5-min)			Average
			L_{eq}	L_{10}	L_{90}	L_{eq}
4-Oct-23	Cloudy	13:05	68.1	69.3	66.9	69.2
		13:10	67.8	68.5	67.1	
		13:15	68.8	69.1	67.8	
		13:20	70.2	72.4	68.2	
		13:25	69.4	70.2	68.3	
		13:30	70.1	72.1	68.3	
10-Oct-23	Cloudy	10:25	76.1	76.7	75.6	74.5
		10:30	76.3	77.0	75.6	
		10:35	75.6	76.4	74.4	
		10:40	73.9	76.5	69.1	
		10:45	71.3	73.6	67.4	
		10:50	70.7	73.4	69.4	
16-Oct-23	Cloudy	09:00	70.8	71.8	70.0	70.3
		09:05	70.9	72.0	69.9	
		09:10	70.4	71.0	69.7	
		09:15	70.1	71.0	69.0	
		09:20	69.6	71.9	68.6	
		09:25	70.0	71.3	68.6	
26-Oct-23	Sunny	15:35	74.8	76.3	73.4	74.4
		15:40	75.3	77.0	73.7	
		15:45	74.1	75.3	72.8	
		15:50	73.9	75.0	72.8	
		15:55	73.9	74.7	73.1	
		16:00	74.1	75.1	73.0	

Noise Levels



Title: Contract 1633 – Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works Graphical Presentation of Construction Noise Monitoring Results	Scale: N.T.S	Project No.: WMA22014	WELLAB 匯力 consulting . testing . research
	Date: Octt 23	Appendix: F	

APPENDIX G
WEATHER CONDITION

APPENDIX G –
GENERAL WEATHER CONDITIONS DURING THE MONITORING PERIOD

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
1 October 23	30.0	77	0
2 October 23	29.5	76	0.4
3 October 23	29.3	78	Trace
4 October 23	30.8	73	0
5 October 23	30.5	58	0
6 October 23	28.3	62	Trace
7 October 23	25.1	74	1.9
8 October 23	24.2	87	92.2
9 October 23	24.5	94	369.7
10 October 23	25.3	83	2.3
11 October 23	25.6	75	0
12 October 23	25.7	72	0
13 October 23	26.7	67	0
14 October 23	26.6	66	0
15 October 23	26.9	72	0.1
16 October 23	26.5	70	0
17 October 23	25.8	61	Trace

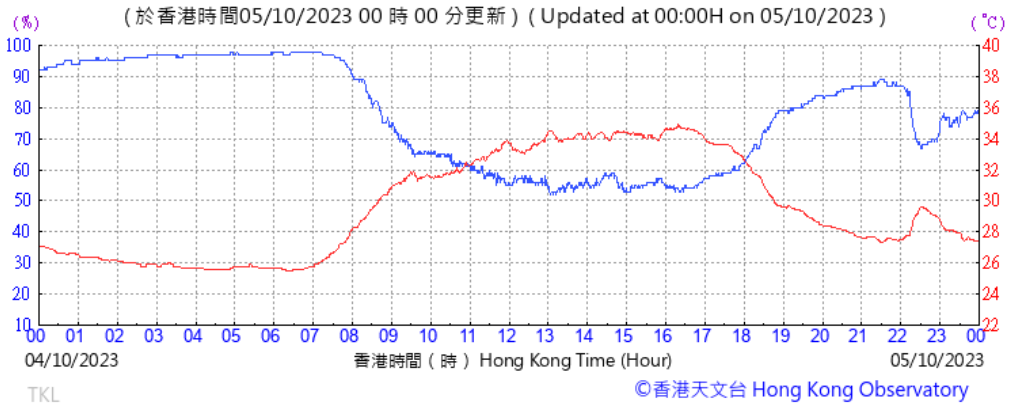
Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
18 October 23	**24.6**	**85**	**38.3**
19 October 23	**25.3**	**91**	**27.9**
20 October 23	**25.9**	**82**	**0.2**
21 October 23	**23.3**	**76**	**Trace**
22 October 23	**24.5**	**71**	**Trace**
23 October 23	**26.0**	**77**	**Trace**
24 October 23	**26.8**	**76**	**0**
25 October 23	**26.6**	**80**	**0**
26 October 23	**26.2**	**78**	**0**
27 October 23	**26.6**	**81**	**0**
28 October 23	**25.8**	**85**	**9.5**
29 October 23	**25.3**	**79**	**3.5**
30 October 23	**26.1**	**77**	**Trace**
31 October 23	**25.8**	**70**	**0**

* The above information was extracted from the daily weather summary by Hong Kong Observatory.

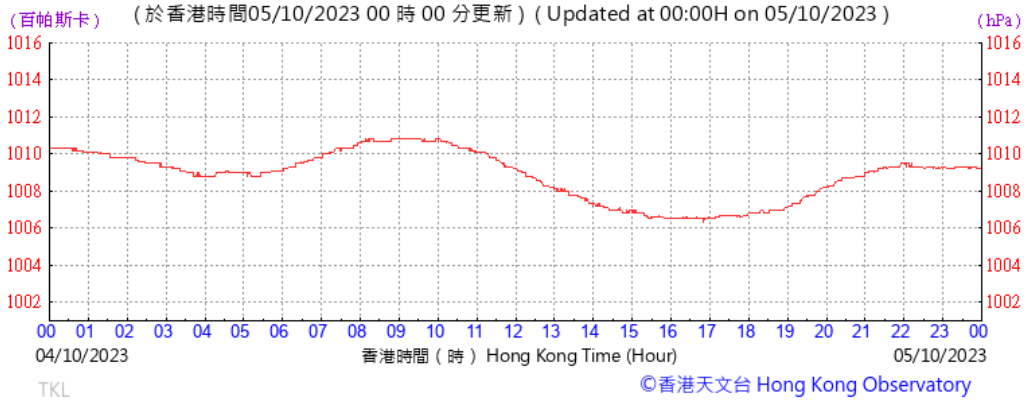
** Trace means rainfall less than 0.05 mm.

4 October 2023

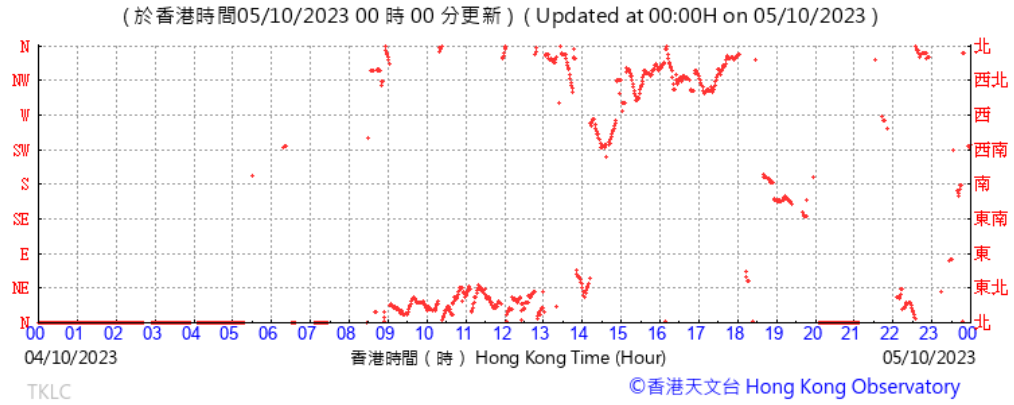
Temperature/Humidity:



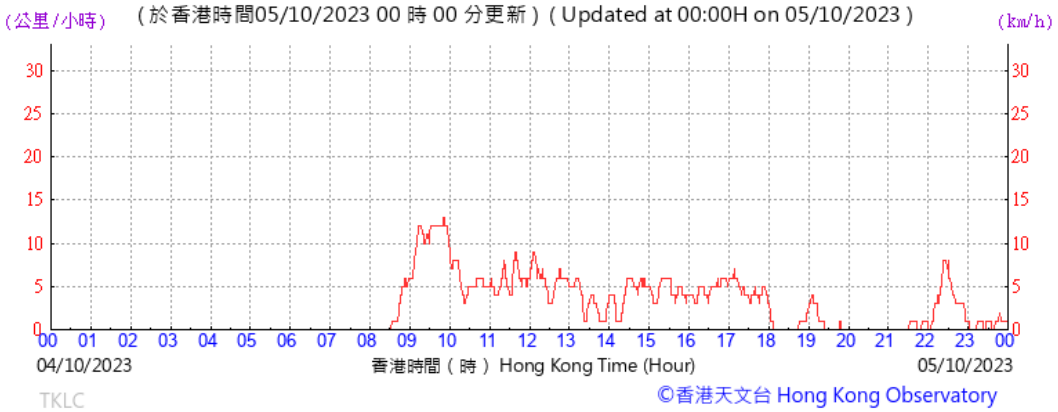
Pressure:



Wind Direction:

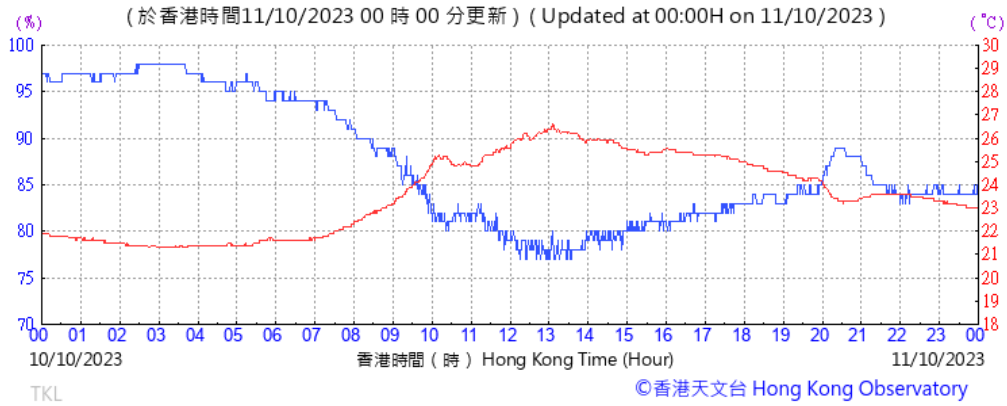


Wind Speed:

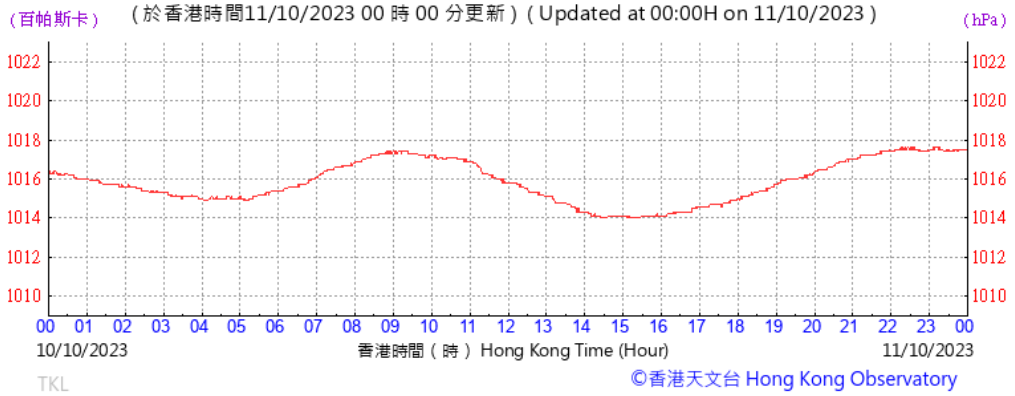


10 October 2023

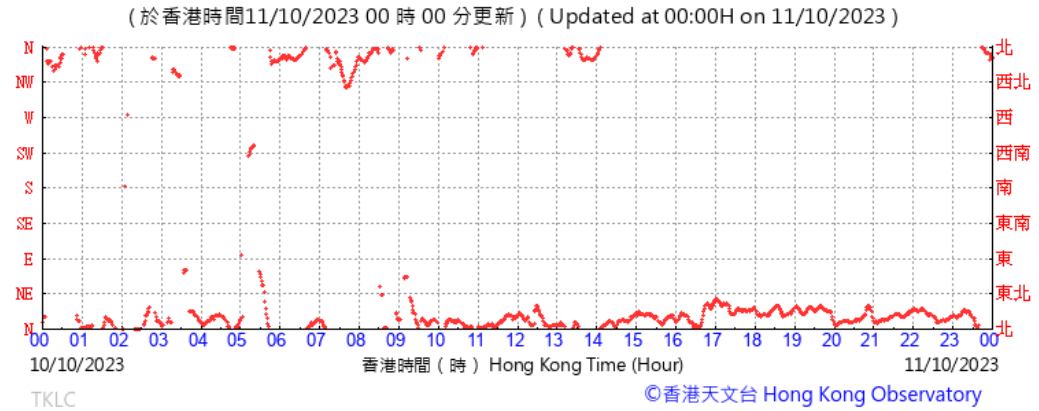
Temperature/Humidity:



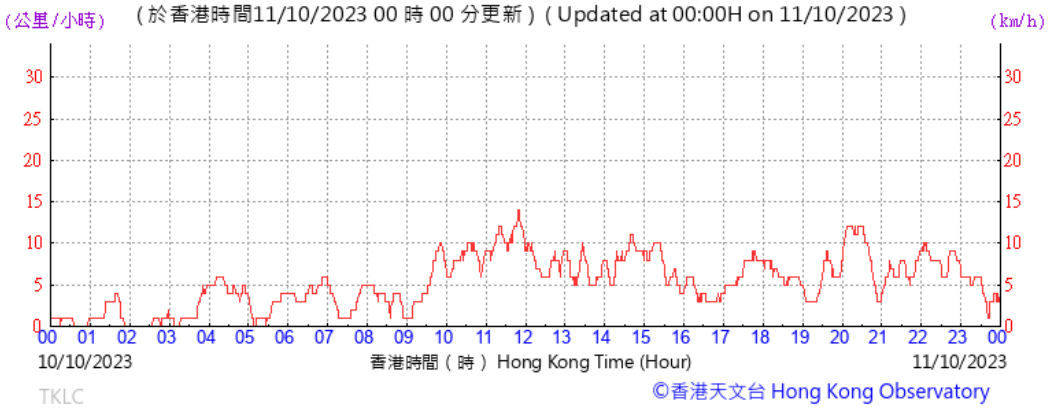
Pressure:



Wind Direction:



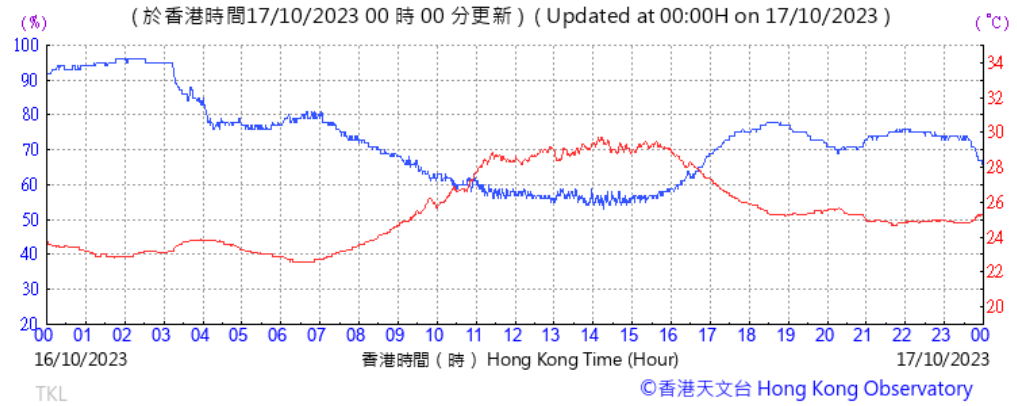
Wind Speed:



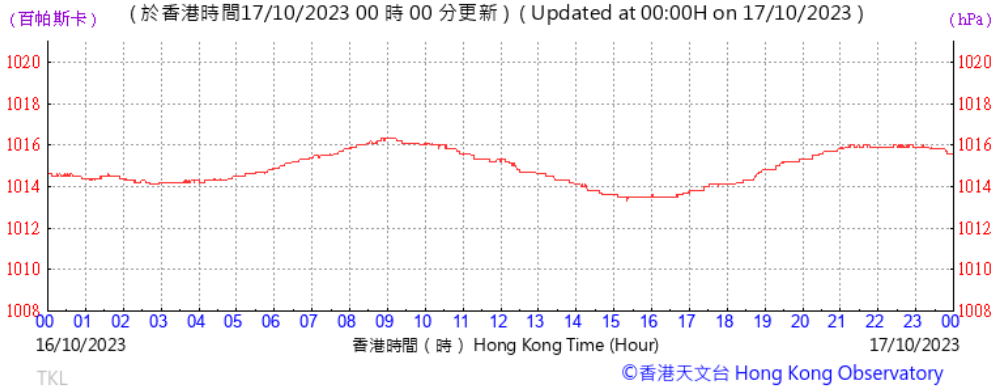
Contract 1633 - Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works	Scale N.T.S	Project No. WMA22014	WELLAB 匯力 consulting . testing . research
Meteorological Data at Ta Kwu Ling Weather Station	Date Oct 23	Appendix G	

16 October 2023

Temperature/Humidity:



Pressure:



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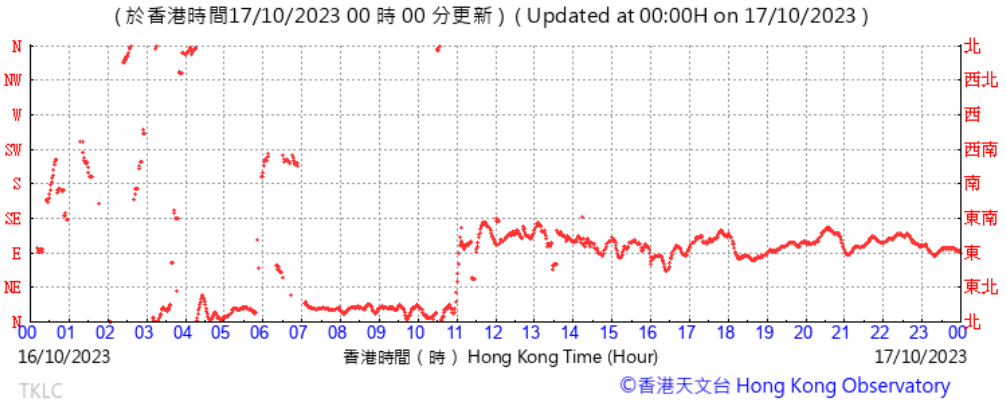
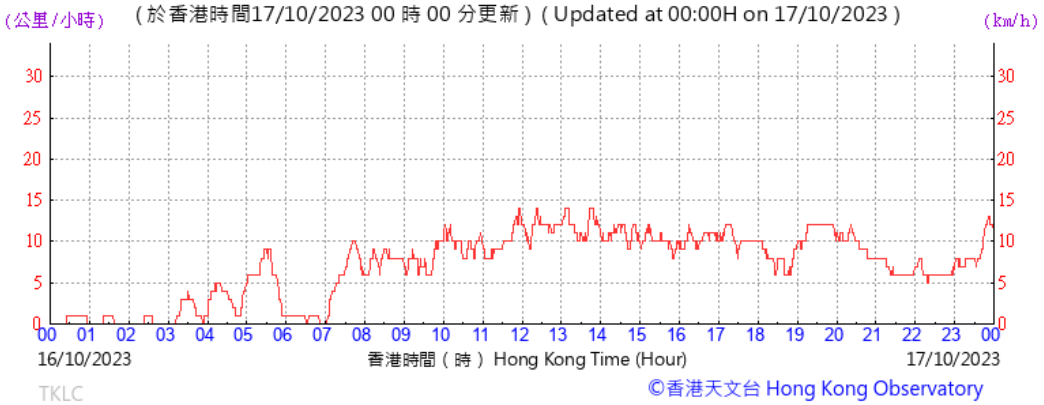


Wind Speed:



Contract 1633 - Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works	Scale N.T.S	Project No. WMA22014	WELLAB 匯力 consulting . testing . research
Meteorological Data at Ta Kwu Ling Weather Station	Date Oct 23	Appendix G	

20 October 2023

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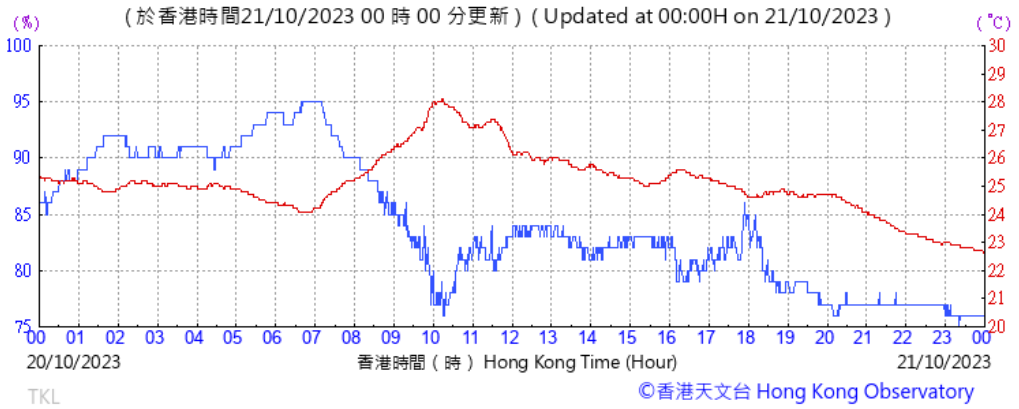
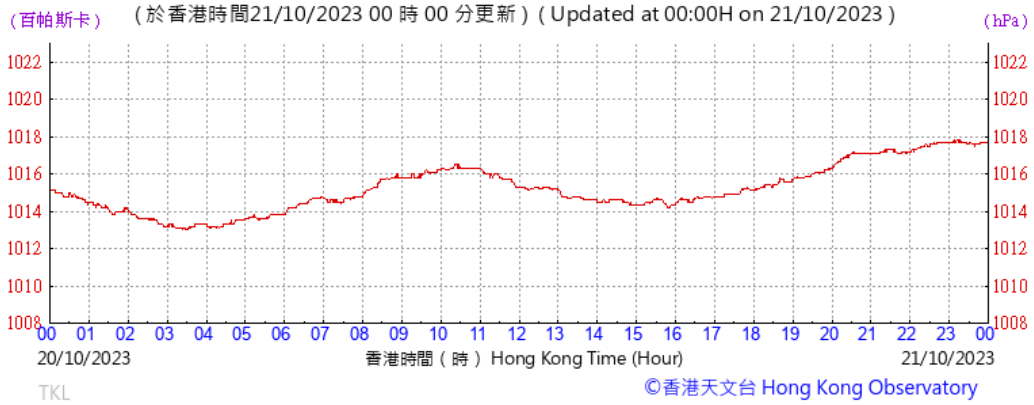
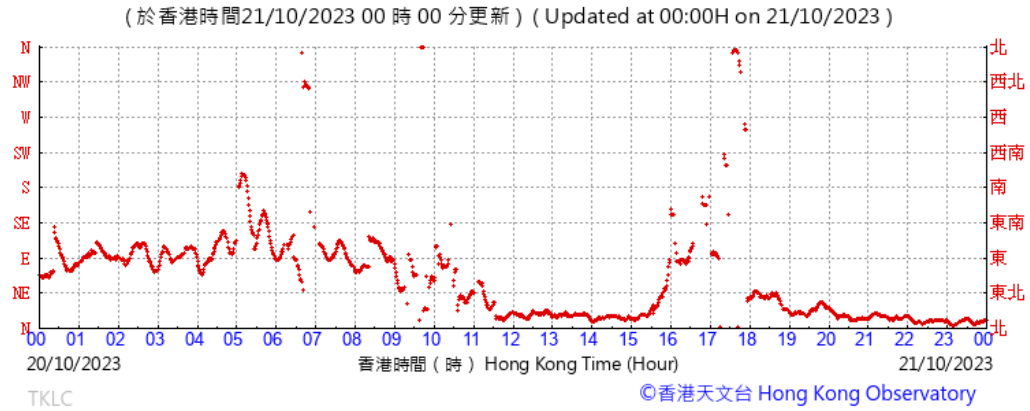


Pressure:



Wind Direction:

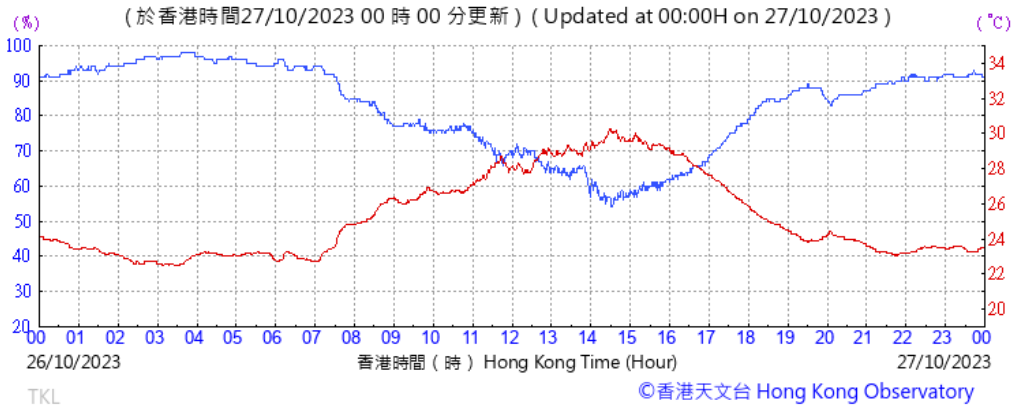


Wind Speed:

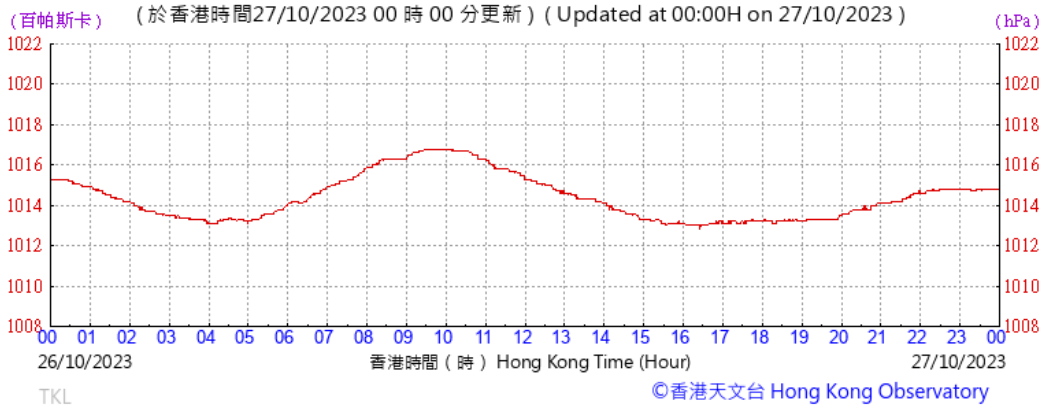
Contract 1633 - Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works	Scale N.T.S	Project No. WMA22014	WELLAB 匯力 consulting . testing . research
Meteorological Data at Ta Kwu Ling Weather Station	Date Oct 23	Appendix G	

26 October 2023

Temperature/Humidity:

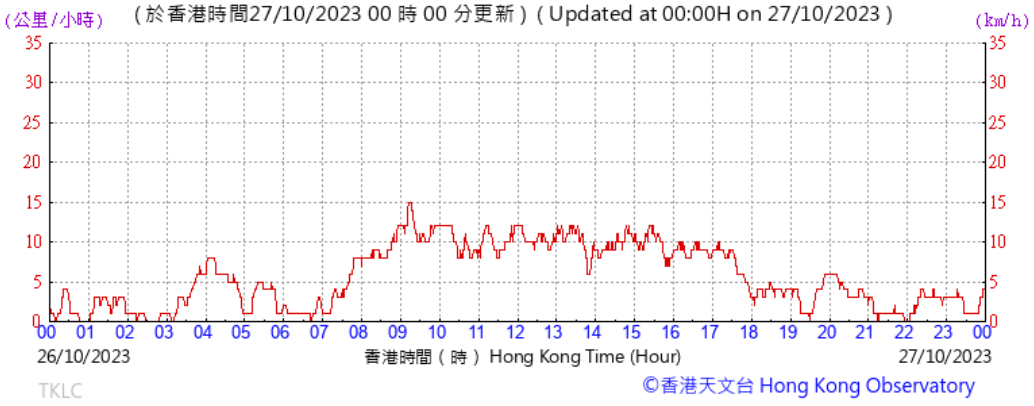


Pressure:



Wind Direction:

Wind Speed:



Contract 1633 - Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works	Scale N.T.S	Project No. WMA22014	WELLAB 匯力 consulting . testing . research
Meteorological Data at Ta Kwu Ling Weather Station	Date Oct 23	Appendix G	

APPENDIX H
EVENT ACTION PLANS

Table 5.5 Event and Action Plan for Construction Dust

Event	Action			
	ET	**IEC**	**ER**	**Contractor**
Action level exceedance for one sample	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.	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.	1. Confirm receipt of notification of exceedance in writing.	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	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.	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.	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.	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	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.	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	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;	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

Event	Action			
	ET	IEC	ER	Contractor
		proposed remedial measures.	4. Supervise implementation of remedial measures.	working days of notification for agreement; 4. Implement the agreed proposals; 5. Amend proposal if appropriate.
Limit level exceedance for two or more consecutive samples	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.	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.	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.	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

Table 6.4 Event and Action Plan for Construction Noise

Event	Action			
	ET	**IEC**	**ER**	**Contractor**
Action Level Exceedance	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.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented	1. 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	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.	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.	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.	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.

Note:
ET – Environmental Team
IEC – Independent Environmental Checker
ER – Engineer or Engineer's Representative

APPENDIX I
SUMMARY OF EXCEEDANCE

Appendix I: Exceedance Report

(A) Exceedance Report for Air Quality

Environmental Monitoring	Parameter	No. of non-project related Exceedance		No. of Exceedance related to the Construction Activities of this Contract	
		Action Level	Limit Level	Action Level	Limit Level
Air Quality	1-hr TSP	0	0	0	0

(B) Exceedance Report for Construction Noise

Environmental Monitoring	Parameter	No. of non-project related Exceedance		No. of Exceedance related to the Construction Activities of this Contract	
		Action Level	Limit Level	Action Level	Limit Level
Noise	$L_{eq(30\ min.)}$ dB(A)	0	0	0	0

APPENDIX J
ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS)

Environmental Mitigation Implementation Schedule

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
Construction Dust Impact								
S7.5.3	D1	**The following dust suppression measures/practices should be incorporated:** • undertaking at all times to prevent dust nuisance as a result of the activities. Effective dust suppression measures, as necessary, should be installed to Minimize air quality impacts, at the boundary of the site and at any sensitive receivers. • Frequently cleaning and watering the site to Minimize 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	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction phase	• APCO • To control the dust impact to meet HKAQO and EIAOTM	^ ^ ^ ^ ^ N/A ^

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
		Engineer may require that the vehicle be restricted to a maximum speed of 15 km per hour while within the site area. • 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 Minimize 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						^ ^ N/A ^ N/A

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
		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. **The following measures related to stockpiling, loading and unloading activities should be incorporated:** • 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.						^ N/A ^ ^
S7.5.3	D2	**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:** • Regulated machines shall be used and exempted NRMMs should be avoided where practicable.	Control emissions from non-road mobile machinery	Contractor	All construction sites	Construction phase	• Air Pollution Control (NRMMs) (Emission) Regulation • To control the fuel combustion	^

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
		• 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.					emission from PMEs	^ ^ N/A ^ ^ ^ ^ N/A
S14.3.3.4	D3	Implement regular dust monitoring under EM&A programme during the construction phase.	Monitoring of dust impact	Contractor	Selected dust monitoring stations	Construction phase	• EIAO-TM	^
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:** • 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	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
		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 utilized, 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.					^ ^ ^ ^ N/A ^ ^
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	• Annex 5, EIAO-TM	^
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.	Minimize the construction noise levels through screening	Contractor	All construction sites	Construction phase	• Annex 5, EIAO-TM	N/A

Environmental Mitigation Implementation Schedule

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
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	^
Operational Fixed Plant Noise								
S8.5.2.1	N5	Housing all noisy equipment inside the plantroom with sufficient sound insulation and sound attenuators for all air louvers (e.g. install plant rooms with fresh air louvres, exhaust air louvres, smoke discharge louvres, etc.) in order to reduce the typical planned fixed noise sources for railway station at the proposed entrances (incorporated with VB) and proposed FRS, including ventilation fans, smoke extraction fans, chillers etc.	Minimize the operational fixed plant noise	Contractor	Construction of railway station at the proposed entrances (incorporated with VB) and proposed FRS	Operational phase	• Annex 5, EIAO-TM	N/A
S8.5.2.2	N6	**The following good site practices to reduce the noise impact on fixed noise sources, the following measures shall be considered as far as practicable to Minimize any potential impacts:** • Equipment should be placed in a plant room with thick walls or at a much greater distance from the receiver or behind some large enough obstruction (e.g. a building or a barrier); • Quieter plant should be chosen as far as practicable; • Noise levels specification should be included when ordering new plant items; • All openings, including louvres for ventilation and machine room doors should be oriented away from the NSRs as far as practicable; • Silencers, acoustic louvres or acoustic doors should be used where necessary; and • Regularly scheduled plant maintenance programme should be developed and	Control the operational fixed plant noise	Contractor	Construction of railway station at the proposed entrances (incorporated with VB) and proposed FRS	Operational phase	• Annex 5, EIAO-TM	N/A N/A N/A N/A N/A N/A

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
		implemented so that plant items are properly operated and serviced.						
S14.3.3.5	N7	Fixed plant commissioning tests shall be conducted for each planned fixed noise source.	To ensure the compliance of predicted the maximum allowable Sound Power Level	Contractor/ MTR Corporation	Each planned fixed noise source	Prior to operational phase	• NCO • EIAO-TM	N/A
Water Quality (Construction Phase)								
S9.3.2.2	W1	**<u>General Construction Activities</u>** **Best Management Practices (BMPs) should be implemented as far as practicable according to The Professional Persons Environmental Consultative Committee (ProPECC) Practice Note (PN) 1/94 "Construction Site Drainage". The details of BMPs are presented as follows:** • The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94. The detailed design of the sand/silt traps should be undertaken by the contractor prior to the commencement of construction; • Schedule construction works to minimize surface construction works during the rainy seasons (April to September). If excavation of spoil cannot be avoided in these months or at any time of year when rainstorms are likely, for the purpose of preventing soil erosion, temporary exposed slope surfaces shall be covered e.g. by tarpaulin, and temporary access roads shall be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels shall be provided (e.g. along the crest / edge of excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements shall always be in place in such a way that adequate surface protection measures can be safely carried out well	To reduce water quality impact from construction site runoff and general construction activities	Contractor	All construction sites	Construction phase	• WPCO • ProPECC (PN1/94) • EIAO-TM • DSS-TM • Technical Circular No. 1/2017 Practical Notes No. 1/2017	N/A N/A

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
		before the arrival of a rainstorm;						
		• Inspect and maintain all drainage facilities and erosion and sediment control structures regularly to ensure proper and efficient operation at all times and particularly following rainstorms;						^
		• Cover all construction materials at temporary storage area with tarpaulin or similar fabric, and temporary access roads shall be protected by crushed stone or gravel, as excavation proceeds during rainstorms and implementation of measures to prevent the washing away of construction materials, soil, silt or debris into any drainage system;						^
		• Intercepting channels shall be provided (e.g. along the crest / edge of excavation) to prevent storm runoff from washing across exposed soil surfaces during rainstorm;						N/A
		• Cover manholes (including newly constructed ones), if any, adequately and seal temporarily to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers;						N/A
		• 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 1/94;						N/A
		• 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						N/A

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
		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.						^
S9.3.2.1	W2	**Mitigation measures/ enhancement measures during demolition of watercourse** • 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	• WPCO • ProPECC (PN1/94) • EIAO-TM • DSS-TM	N/A N/A
S9.3.2.3	W3	**Mitigation measures for effluent discharge from excavation** • Wastewater from excavation with a high level of suspended solids should be filtered before discharge by settlement in tanks with sufficient retention time. • Oil interceptors would be required to remove any oil, lubricants, and grease from wastewater. • All discharge to stormwater drain should be followed discharge licence under the Water Pollution Control Ordinance (WPCO) • The contractor should be monitoring the quantity and quality of effluent discharge to ensure compliance with the conditions of the discharge license	To minimize the water quality impact from the wastewater generated form excavation	Contractor	All Construction sites	Construction phase	• WPCO • ProPECC (PN1/94) • EIAO-TM • DSS-TM	^ N/A ^ ^

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
S9.3.2.4	W5	**Sewage Effluent from Construction Workforce** • 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	• WPCO • ProPECC (PN1/94) • EIAO-TM • DSS-TM	^ N/A N/A ^
S9.3.2.5	W6	**Accidental Spillage** • 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; • 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;	To minimize water quality impact from accidental spillage of chemicals	Contractor	All construction sites	Construction phase	• WPCO • ProPECC (PN1/94) • EIAO-TM • DSS-TM • WDO	^ ^ ^ ^

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
		• 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.						N/A ^ ^ N/A N/A
Water Quality (Operational Phase)								
S9.4.2.1	W7	**The following mitigation measures for stormwater surface runoff will be implemented.** • Stormwater surface runoff generated should be discharged to the nearby government drainage system. • The rainwater runoff from station structures (e.g. ventilation building, entrance, etc.) is provided with peripheral drain conveying to government drainage	To minimize the water quality impact from stormwater surface runoff	MTR Corporation	Whole alignment	Operational Phase	• WPCO	N/A N/A
S9.4.2.2	W8	**The following mitigation measures for sewage and other wastewater will be implemented.** • Sewage effluents including the sewage from	To minimize the water quality impact from sewage and other wastewater	MTR Corporation	Whole alignment	Operational Phase	• WPCO • ProPECC PN 5/93	N/A

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
		the sanitary fitment and the foul water from washing facilities and track of the proposed railway station at Kwu Tung should be conveyed to the public sewers. • During the interim phase, the sewage will be connecting to the public sewer at the west. • As for the ultimate phase, the sewage will be conveyed to the public sewer along Road L3 of Kwu Tung North New Development Area. • Standard oil/grit interceptors/chambers should be provided where necessary to remove the oil, lubricants, grease, silt, and grit from wastewater generated from facilities washing before discharge to public sewers. • A discharge licence for the discharge of commercial and industrial effluent is needed and the discharge quality must satisfy all the standards listed in the DSS-TM and meet the requirements specified in the discharge licence. • The practices outlined in ProPECC PN 5/93 for handling, treatment, and disposal of operational stage effluent should also be adopted where applicable.					• DSS-TM	N/A N/A N/A N/A N/A
Waste Management (Construction Phase)								
S10.2.2.1	WM1	**<u>Good Site Practices</u>** **The following good site practices are recommended to reduce waste generation during construction:** • Nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices,	Ensure proper waste management system throughout the construction	Contractor	All construction sites	Construction phase	• WDO • ETWB TC(W) 19/2005	^

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
		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 Minimize 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.						^ ^ ^ ^ ^
S10.2.2.2	WM2	**<u>Waste Reduction Measures</u>** **The following recommendations are proposed to achieve reduction of waste:** • 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 minimize amount of waste generated and avoid unnecessary generation of waste; • Sort out demolition debris from demolition	Reduce waste generation	Contractor	All construction sites	Construction phase	• WDO	^ ^ N/A

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
		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.						^
S10.2.2.3	WM3	**<u>Storage, Collection and Transportation of Waste</u>** **The following recommendation should be implemented to minimize the impacts from storage, collection and transportation of waste:** • 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; • 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.	Minimize impact to the environment due to storage, collection and transport of waste	Contractor	All construction sites	Construction phase	• WDO • Land (Miscellaneous Provisions) Ordinance • ETWB TCW No. 19/2005	^ ^ ^ ^ ^ ^ ^
S10.2.2.4	WM4	**<u>C&D Materials</u>** **The following recommendation should be implemented in handling the C&D materials:** • Carry out on-site sorting;	Minimize waste impacts from C&D materials handling	Contractor	All construction sites	Construction phase	• WDO • ETWB TCW No. 19/2005 • Land	^

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
		• 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. **<u>On-site Sorting of C&D Materials</u>** • 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. • The Contractor would be responsible for devising a system to work for on-site sorting of C&D materials and promptly remove all sorted and processed material arising from the construction activities to minimize temporary stocking on-site. • It is recommended that the system should include the identification of the source of generation, estimated quantity, arrangement for on-site sorting and/ or collection, temporary storage areas, and frequency of collection by recycling Contractors or frequency of removal off-site.					(Miscellaneous Provisions) Ordinance	^ ^ ^ ^ ^ ^

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
S10.2.2.4	WM5	**Reuse of C&D Materials** • Reuse suitable excavated rock by reworking at approved quarries (e.g. crushed as aggregates); • Sorting of demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (e.g. soil, broken concrete, metal); and • Protect recyclable material to keep it in usable condition.	Minimize waste impacts from C&D materials handling	Contractor	All construction sites	Construction phase	• WDO • ETWB TCW No. 19/2005 • Land (Miscellaneous • Provisions) Ordinance	N/A N/A ^
S10.2.2.4	WM6	**Specification of Inert C&D Materials to be Delivered Offsite** **In case there are surplus inert C&D materials generated in the Project and are required to delivered to the Public Fill Reception Facilities (PFRFs), the inert C&D materials should fulfil the following requirements:** • Reclaimed asphalt pavement will not be mixed with other materials when delivered to the public fill reception facilities; • Moisture content of inert C&D materials will be lowered to 25% max. when delivered to the public fill reception facilities; • 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.	Reduce waste generation	Contractor	All construction sites	Construction phase	• WDO • ETWB TCW No. 19/2005 • Land (Miscellaneous • Provisions) Ordinance	N/A ^ ^ ^
S10.2.2.5	WM7	**Chemical Waste** • For those processes which generate chemical	Control the chemical waste and ensure proper storage,	Contractor	All construction sites	Construction phase	• Waste Disposal (Chemical Waste)	N/A

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, 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.	handling and disposal				(General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	^ N/A
S10.2.2.6	WM8	**<u>General Refuse</u>** • 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	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction phase	• WDO	^ ^ ^

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
		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.						^ ^ ^
Waste Management (Operational Phase)								
S10.3.2.1	WM9	**General Refuse** • Recycling of waste paper, aluminium cans and plastic bottles should be encouraged. • It is recommended to place clearly labelled recycling bins at designated locations which could be accessed conveniently. • General refuse should be separated from chemical waste by providing separated bins for storage to maximize the recyclable volume as far as practicable. • A reputable waste collector should be employed to remove general refuse regularly to minimize odour, pest and litter impacts. • Arrangements should be made with the recycling companies to collect the recycle waste as required.	Remove municipal solid waste generated	MTR Corporation	Kwu Tung Station as well as associated facilities	Operational phase	• WDO	N/A N/A N/A N/A N/A

Environmental Mitigation Implementation Schedule

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
S10.3.2.2	WM10	**Chemical Waste** • Subject to operational needs, if chemical waste is to be produced, the Project Proponent shall register with EPD as chemical waste producers as appropriate in accordance with the Waste Disposal (Chemical Waste) (General) Regulation. Chemical waste should be collected and disposed of at appropriate facility like CWTC by licensed collectors. • The requirements given in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes should be followed, where applicable, in handling of these chemical wastes. The requirements for the collection and disposal of chemical waste as stipulated in the Waste Disposal (Chemical Waste) (General) Regulation should be followed to monitor all movements of chemical wastes which will be collected by a licensed collector to a licensed facility for final treatment and disposal. • Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. • Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidising, irritant, toxic, harmful, corrosive, etc. • Non-recyclable chemical waste (e.g. spent lubricant oil) should be disposed of at appropriate facility like CWTC by licensed collectors. Recyclable chemical waste (e.g. used fluorescent tubes) should be collected	Minimize production of chemical waste	MTR Corporation	All construction site	Operational phase	• WDO • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	N/A N/A N/A N/A N/A

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
		and transported off-site by licensed collectors.						
Cultural Heritage (Construction Phase)								
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)	^
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)	^
Landscape and Visual (Construction Phase)								
S13.6.1	LV1	**Decorative Site Hoarding** 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
Landscape and Visual (Operational Phase)								
S13.6.2.2	LV2	**Compensatory Tree Planting** On-site and off-site tree compensation methods are being considered. The Project Proponent is still exploring the possible locations including the new development area at KTN NDA, LCSD park etc. of tree compensation and would continue to liaise with different government departments such as CEDD,	Compensate for trees due to the Project	Contractor/ MTR Corporation	Onsite where possible. Otherwise consider offsite locations	Detailed design and operational phase	• EIAO-TM • DEVB TCW No. 4/2020	N/A

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
		LCSD, LandsD and AFCD etc. on the details for tree compensation. The following potential locations for tree compensation were identified and the actual locations are subject to further liaison with relevant parties: • Town Plaza in KTN NDA; • LCSD sitting-out areas, parks, roadside tree pits and landscape areas in North District; • Hillside in the North District for whip tree planting; and Any other locations to be agreed with government departments.						
S13.6.2.1	LV3	**Screen Planting/ Vertical Greening** Screen planting/ vertical greening could effectively constitute a fascinating landscape and blend the building with the surrounding greenery.	Improve compatibility with the surrounding environment	Contractor/ MTR Corporation	All structures as feasible, final location to be confirmed at detailed design phase	Detailed design and operational phase	• EIAO-TM	N/A
S13.7.2	LV4	**Architectural Aesthetic Design of Built Structure** **The design objectives are as follows:** • To Minimize the visual impact within a densely populated residential area by creating a simple and elegant design; • To create a lean building massing, maximise the at grade green landscaping area to locals and Minimize the visual impact; and • To introduce biophilic orientated design as far as practicable. It is aimed to integrate the above-ground structures to the future landscape design by others and contributes to the immediate surroundings, such as	Improve visual amenity of the built structure	Contractor/ MTR Corporation	All structures as feasible, final location to be confirmed at detailed design phase	Detailed design and operational phase	• EIAO-TM	N/A N/A N/A

Environmental Mitigation Implementation Schedule

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
		green roofing, green wall, green fifth elevation design and environmentally sustainable architecture.						
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	• EIAO Guidance Note No.4/2010 • EIAO-TM	^
S14.3.1.3	EM2	• 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	• EIAO Guidance Note No.4/2010 • EIAO-TM	^ ^

Implementation status:

^ Mitigation measure was fully implemented
* Observation/reminder was made during site audit but improved/rectified by the contractor
\# Observation/reminder was made during site audit but not yet improved/rectified by the contractor
X Non-compliance of mitigation measure
• 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 K
WASTE GENERATION IN THE REPORTING MONTH

Contract 1633 - Alteration and Addition Works at Kwu Tung
for East Rail Line Protection Works

Monthly Summary Waste Flow Table for 2023

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly						
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	Timber	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Yard Waste	Others, e.g. general refuse
	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000 kg)	(in '000kg)
Jan	/	/	/	/	/	/	/	/	/	/	/	/	/
Feb	0	0	0	0	0	0	0	0	0	0	0	51.47	0
Mar	0	0	0	0	0	0	0	0	0	0	0	0	100.13
Apr	0	0	0	0	20.51	0	0	0	0	0	0	7.63	34.1
May	0	0	0	0	244.26	0	0	0	0	0	0	0	59.24
Jun	0	0	0	0	940.37	0	0	0	0	0	0	0	31.76
Jul	0	0	0	0	1279.92	0	0	0	0	0	0	0	4.84
Aug	0	0	0	0	56.42	0	0	0	0	0	0	0	23.51
Sep	0	0	0	0	0	0	0	0	0	0	0	0	281.33
Oct	0	0	0	0	0	0	0	0	0	0	0	0	30.23
Nov													
Dec													
Total	0	0	0	0	2541.48	0	0	0	0	0	0	59.1	565.14

APPENDIX L
COMPLAINT LOG

Appendix L - Complaint Log

Reporting month: October 2023

Complaint Log Ref.	EPD Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
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Cumulative Complaint Log

Reporting Period	Total no. of Complaint Received
This reporting month	0
From 20th February 2023 to end of the reporting month	0

APPENDIX M
SUMMARY OF SUCCESSFUL PROSECUTION

Appendix M - Summary of Successful Prosecution

Date of Successful Prosecution	Details of the Successful Prosecution	Status	Follow Up	Total no. Received in this Reporting Month	Total no. Received since Project Commencement
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APPENDIX N
SITE AUDIT SUMMARY

FEP-06/129/2002/I

Contract 1633 -

Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works

Weekly Site Inspection Record Summary

Checklist Reference Number	231003
Date	3 October 2023 (Tuesday)
Time	09:00 – 10:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Construction Noise Impact	
	• No environmental deficiency was identified during site inspection.	
	D. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Cultural Heritage	
	• No environmental deficiency was identified during site inspection.	
	G. Landscape & Visual	
	• No environmental deficiency was identified during site inspection.	
	H. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	I. Others	
	• No environmental deficiency was identified during site inspection.	
	Follow-up on previous audit section (Ref. No.:230925), no major environmental deficiency was identified during the site inspection.	

	Name	Signature	Date
Recorded by	Marco Ma		3 October 2023
Checked by	Dr. Priscilla Choy		3 October 2023

MTR Contract 1633

Alteration and Addition Works at Kwu Tung for

East Rail Line Protection Works

Environmental Observations Identified during the Environmental Site Inspection (3 October 2023)

No major environmental deficiency was identified during the site inspection.

Rectification Actions taken by the Contractor for Environmental Deficiencies Identified during Previous Audit Session on 25 September 2023

No major environmental deficiency was identified during the site inspection.

FEP-06/129/2002/I

Contract 1633 -

Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works

Weekly Site Inspection Record Summary

Checklist Reference Number	231010
Date	10 October 2023 (Tuesday)
Time	09:30 – 10:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Construction Noise Impact	
	• No environmental deficiency was identified during site inspection.	
	D. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Cultural Heritage	
	• No environmental deficiency was identified during site inspection.	
	G. Landscape & Visual	
	• No environmental deficiency was identified during site inspection.	
	H. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	I. Others	
	• No environmental deficiency was identified during site inspection.	
	Follow-up on previous audit section (Ref. No.:231003), no major environmental deficiency was identified during the site inspection.	

	Name	Signature	Date
Recorded by	Marco Ma		10 October 2023
Checked by	Dr. Priscilla Choy		10 October 2023

MTR Contract 1633

Alteration and Addition Works at Kwu Tung for

East Rail Line Protection Works

Environmental Observations Identified during the Environmental Site Inspection (10 October 2023)

No major environmental deficiency was identified during the site inspection.

Rectification Actions taken by the Contractor for Environmental Deficiencies Identified during Previous Audit Session on 3 October 2023

No major environmental deficiency was identified during the site inspection.

FEP-06/129/2002/I

Contract 1633 -

Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works

Weekly Site Inspection Record Summary

Checklist Reference Number	231017
Date	17 October 2023 (Tuesday)
Time	09:30 – 10:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Construction Noise Impact	
	• No environmental deficiency was identified during site inspection.	
	D. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Cultural Heritage	
	• No environmental deficiency was identified during site inspection.	
	G. Landscape & Visual	
	• No environmental deficiency was identified during site inspection.	
	H. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	I. Others	
	• No environmental deficiency was identified during site inspection.	
	Follow-up on previous audit section (Ref. No.:231010), no major environmental deficiency was identified during the site inspection.	

	Name	Signature	Date
Recorded by	Marco Ma		17 October 2023
Checked by	Dr. Priscilla Choy		17 October 2023

MTR Contract 1633

Alteration and Addition Works at Kwu Tung for

East Rail Line Protection Works

Environmental Observations Identified during the Environmental Site Inspection (17 October 2023)

No major environmental deficiency was identified during the site inspection.

Rectification Actions taken by the Contractor for Environmental Deficiencies Identified during Previous Audit Session on 10 October 2023

No major environmental deficiency was identified during the site inspection.

FEP-06/129/2002/I

Contract 1633 -

Alteration and Addition Works at Kwu Tung for East Rail Line Protection Works

Weekly Site Inspection Record Summary

Checklist Reference Number	231024
Date	24 October 2023 (Tuesday)
Time	10:30 – 11:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-
Ref. No.	**Remarks/Observations**	**Related Item No.**
	B. Air Quality	
	• No environmental deficiency was identified during site inspection.	
	C. Construction Noise Impact	
	• No environmental deficiency was identified during site inspection.	
	D. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	E. Waste / Chemical Management	
	• No environmental deficiency was identified during site inspection.	
	F. Cultural Heritage	
	• No environmental deficiency was identified during site inspection.	
	G. Landscape & Visual	
	• No environmental deficiency was identified during site inspection.	
	H. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	I. Others	
	• No environmental deficiency was identified during site inspection.	
	Follow-up on previous audit section (Ref. No.:231017), no major environmental deficiency was identified during the site inspection.	

	Name	Signature	Date
Recorded by	Marco Ma		25 October 2023
Checked by	Dr. Priscilla Choy		25 October 2023

MTR Contract 1633

Alteration and Addition Works at Kwu Tung for

East Rail Line Protection Works

Environmental Observations Identified during the Environmental Site Inspection (24 October 2023)

No major environmental deficiency was identified during the site inspection.

Rectification Actions taken by the Contractor for Environmental Deficiencies Identified during Previous Audit Session on 17 October 2023

No major environmental deficiency was identified during the site inspection.