MTR Corporation Limited

Tung Chung Line Extension

Monthly EM&A Report No.2
(for July 2023)

(Condition 3.4 of EP-614/2022)

Verified by: Adi Lee 

Position: Independent Environmental Checker

Date: 14 August 2023

MTR Corporation Limited

Tung Chung Line Extension

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Certified by: Edan Li

Position: Environmental Team Leader

Date: 14 August 2023

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[for July 2023]

Table of Contents

List of Tables

List of Appendices

1 INTRODUCTION

1.1 Background

1.1.1 The Railway Development Strategy 2014 (RDS-2014) announced by the Government of the Hong Kong Special Administrative Region included the conceptual scheme of Tung Chung West (TCW) Extension and a possible Tung Chung East (TCE) Station.

1.1.2 This new railway system has been included in the approved Schedule 3 Environmental Impact Assessment (EIA) for Tung Chung New Town Extension (TCNTE), which has included the new stations at TCE area and TCW area and the associated trackwork and tunnel. However, a separate Schedule 2 EIA study for this railway system is conducted to address the associated environmental impacts, taking into account of the latest design.

1.1.3 The EIA Report for Tung Chung Line Extension (the Project) was approved on 12 July 2022 (Register No. AEIAR-235/2022). The Environmental Permet (EP) No. EP-614/2022 was then issued on 9 August 2022.

1.2 Project Programme

1.2.1 Two construction Works Contracts of the Project have been awarded since May 2023. The construction of the Project commenced in June 2023 and is expected to complete in 2029. **Table 1.1** summarises the information of the awarded Works Contracts.

Table 1.1 Summary of Awarded Works Contracts

Works Contract	Description	Construction Start Date	Contractor	Environmental Team
1201	Tung Chung West Station and Tunnels	June 2023	Bouygues – Dragages (1201) JV	AECOM Asia Co. Ltd.
1202	Tung Chung East Station and Associated Enabling Works for Track Diversions	July 2023	Paul Y. – CRCC (TUE1202) JV	Acuity Sustainability Consulting Limited

1.3 Purpose of the Report

1.3.1 The Environmental Monitoring and Audit (EM&A) programme for the Project commenced in June 2023. This is the second EM&A Report for the Project which summarises the EM&A works undertaken by the respective Contractor's ET during the period from 1 to 31 July 2023.

2 ENVIRONMENTAL MONITORING AND AUDIT

2.1 EM&A Results

2.1.1 The EM&A Report for Works Contracts 1201 and 1202 prepared by the Contractor's ET are provided in **Appendix A** and **Appendix B**. The EM&A Report provides details of the project information, EM&A requirements, impact monitoring and audit results for the Contracts.

2.1.2 A summary of the major construction activities undertaken by the Contractor of Works Contract during the reporting period are presented in **Table 2.1**.

Table 2.1 Summary of Major Construction Activities in the Reporting Period

Works Contract	Site	Construction Activities
1201	Tung Chung West (TCW) Area	• Site clearance at Yu Tung Road and transplantation • Construction of covered walkway for footbridge ramp demolition at Yu Tung Road • Site clearance, site formation and ground investigation at TCW • Preparation for site office setup
	Tung Chung Cresecent (TCC) and Tung Chung Ancillary Building (TCA) Areas	• Site clearance at TCC area • Site preparation at TCA area
	Barging Facility Area	• Site preparation
1202	Tung Chung East (TCE) Area	• Site preparation • Site clearance • Preparation for site office setup
	Area 138	• Site preparation

2.1.3 During the reporting month, impact monitoring for air quality and construction noise were conducted in accordance with the EM&A Manual. No exceedances of the Action / Limit Level of 1-hour TSP and Action / Limit level of construction noise due to the Project construction were recorded. Results of air quality and construction noise are summarised in **Tables 2.2** and **2.3** respectively. Details of the monitoring requirements, locations, equipment and methodology are presented in the EM&A Report (**Appendix A** and **Appendix B**).

Table 2.2 Summary of 1-Hour TSP Monitoring Results in the Reporting Period

Monitoring Station ID	Location	TSP Concentration ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)	Exceedance due to the Project Construction (Yes/No)
Works Contract 1201					
DM-2	Sheraton Hong Kong Tung Chung Hotel Shopping Mall	N/A(1)	326	500	No
DM-3	Shops at Tung Chung Crescent	N/A(1)	327	500	No
DM-4	Yat Tung Shopping Centre	23.8 – 127.8	312	500	No
DM-5b(2)	Ma Wan Chung Village	24.4 – 133.4	333	500	No
Works Contract 1202					

Monitoring Station ID	Location	TSP Concentration (μg/m³)	Action Level (μg/m³)	Limit Level (μg/m³)	Exceedance due to the Project Construction (Yes/No)
DM-1b(3)	G/F of Ying Yuet House	22.2 – 177.3	327	500	No
DM-1a	TCNTE East - Planned Commercial Development (COM-1/Area 57)	N/A(1)	342	500	No

Note:
(1) Imapct monitoring to be carried out during the construction period of corresponding activity
(2) Alternative monitoring location to DM-5 Ma Wan Chung Vilage in the approved EM&A Mnaual
(3) Alternative monitoring location to DM-1 Rosita Yuen Kindergarten in the appvoed EM&A Manual

Table 2.3 Summary of Construction Noise Monitoring Results in the Reporting Period

Monitoring Station ID	Location	Noise Level ($L_{Aeq,30mins}$, dB(A))	Limit Level (dB(A))	Exceedance due to the Project Construction (Yes/No)
Works Contract 1201				
NM2	Tung Chung Crescent	N/A(1)	75	No
NM3a(3)	2/F rooftop of Yat Tung Shoppgin Centre	50.5 – 52.4	75	No
Works Contract 1202				
NM1	Ying Tung Estate	Below baseline level – 58.6	75	No
NM4	Tung Chung Area 113	N/A(2)	75	No
NM6	Tung Chung Area 100	N/A(2)	75	No

Note:
(1) Impact noise monitoring to be carried out during the construction period of the corresponding activity
(2) Impact noise monitoring to be carried out upon the intake of the population and during the construction period of the corresponding activity
(3) Alternative monitoring location to NM3 Yat Tung Estate in approved EM&A Manual

2.1.4 No environmental complaint was record in the reporting period. No notification of summons and successful prosecutions were recorded in the reporting period. Log for environmental complaints, notification of summons and successful prosecutions is provided in **Table 2.4**.

Table 2.4 Log for Environmental Complaints, Notification of Summons and Successful Prosecutions for the Reporting Month

Works Contract	Environmental Complaints	Notification of Summons	Successful Prosecutions
1201	0	0	0
1202	0	0	0

2.1.5 Regular site inspections were conducted by the Contractor's ET on a weekly basis to check the implementation of environmental pollution control and mitigation measures for the Project. No non-conformance was identified in the reporting period.

3 IMPLEMENTATION STATUS ON THE ENVIRONMENTAL PROTECTION REQUIREMENTS

3.1.1 The respective Contractors have implemented all mitigation measures and requirements as stated in the EIA Report, EM&A Manual and EP (EP-614/2022). The status of required submissions under the EP as of the reporting period are summarised in **Table 3.1**.

Table 3.1 Summary of EP Submissions Status

EP Condition (EP-614/2022)	Submission	Submission date
Condition 1.12	Notification of Commencement Date of Construction	9 Mar 2023 9 May 2023 (update)
Condition 1.14	Notification of Commencement Date of Operation	No later than 1 month prior to the commencement of operation
Condition 2.9	Notification of Setup of Community Liaison Group	21 Mar 2023
Condition 2.10	Construction Works Phasing Schedule	14 Apr 2023
Condition 2.11	EP Submission Schedule	14 Apr 2023
Condition 2.12	Management Organization	28 Apr 2023
Condition 2.13	Construction Noise Management Plan (CNMP) • Works Contract No. 1201 • Works Contract No. 1202	 10 Mar 2023 31 May 2023 (Approval) 10 Mar 2023 30 Jun 2023 (Approval)
Condition 2.14	Rail Noise Mitigation Plan (RNMP)	13 Jan 2023
Condition 2.15	Plan on Noise Enclsoure at Tung Chung Crescent	13 Apr 2023
Condition 2.17	Landscape and Visual Mitigatin Plan (LVMP)	12 Apr 2023
Condition 2.18	Contingency and Response Plan	To be submitted at least 2 months before the commencement of relevant part of the construction works
Condition 2.19	Wastewater Management Plan (WWMP)	9 Mar 2023 31 May 2023 (Approval)
Condition 2.20	Waste Management Plan (WMP)	16 Feb 2023
Condition 2.23	Futher Archaeological Testing Report	28 Sep 2022
Condition 2.25	Fixed Plant Noise Audit Report	To be submitted at least 1 month before commencement of operation of the Project
Condition 3.3	Baseline Monitoring Report	28 Apr 2023
Condition 3.4	Monthly EM&A Report No.1 Monthly EM&A Report No.2	14 July 2023 This submission
Condition 4.2	Dedicated Internet Website	10 Jul 2023

Appendix A

Monthly EM&A Report
for
Contract 1201
Tung Chung West Station and Tunnels

(July 2023)

AECOM

Tung Chung Line Extension
Contract 1201
Tung Chung West Station and Tunnels

Monthly EM&A Report for July 2023

Ref: 1201-B-TCW-BDJ-510-000071A-2

August 2023

Bouygues - Dragages (1201) Joint Venture

Delivering a better world

Quality information

Prepared by	Checked and Certified by Contractor's ET Leader	Approved by
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Revision History

Revision	Revision date	Details	Authorized	Name	Position

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Table of Contents

Tables

Figures

Appendices

EXECUTIVE SUMMARY

Tung Chung Line Extension Contract 1201 – Tung Chung West (TCW) Station and Tunnels (hereafter called "Contract 1201") covers part of the Tung Chung Line Extension (hereafter called "the Project") construction.

The Contract 1201 comprises the constructions for extending the existing Tung Chung Line (TCL) from the existing overrun tunnel of Tung Chung Station (TUC) to the new underground TCW Station near Yat Tung Estate including Emergency Access Point (EAP) / Emergency Egress Point (EEP) building, station associated facilities and overrun tunnel.

The EM&A programme commenced on 1 June 2023. The impact EM&A for the Project includes air quality and noise monitoring.

This report documents the findings of EM&A works conducted in the period between 1 and 31 July 2023.

Breaches of Action and Limit Levels for Air Quality

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

Breaches of Action and Limit Levels for Noise

No exceedance of Action and Limit Level of noise was recorded in the reporting month.

Complaint, Notification of Summons and Successful Prosecution

No complaint, notification of summons and successful prosecution were received in the reporting month.

Reporting Changes

There was no reporting change in the reporting month.

Future Key Issues

Key issues to be considered in the next three months included:

Location	Site Activities
TCW Area	• Construction of covered walkway for footbridge ramp demolition at Yu Tung Road • Demolition of Yu Tung Road footbridge ramp • Site clearance, site formation and ground investigation at TCW • Preparation for station diaphragm wall construction • Setup of site office
TCC and TCA Area	• Site clearance at Shun Tung Road, TCC and TCA areas • Ground investigation and construction of pipe wall at TCC area • Site setup and ground investigation at TCA area
Barging Facilities	• Site preparation

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

1. Introduction

Bouygues - Dragages (1201) Joint Venture (BDJV) was commissioned by the MTR Corporation (MTRC) as the Civil Contractor for Works Contract 1201. AECOM Asia Company Limited (AECOM) was appointed by BDJV as the Contractor's Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the Project.

1.1 Propose of the Report

1.1.1 This is the 2nd monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting period between 1 and 31 July 2023.

1.2 Report Structure

1.2.1 This monthly EM&A Report is organized as follows:

- Section 1: Introduction
- Section 2: Project Information
- Section 3: Environmental Monitoring Requirement
- Section 4: Implementation Status of Environmental Mitigation Measures
- Section 5: Monitoring Results
- Section 6: Environmental Site Inspection and Audit
- Section 7: Environmental Non-conformance
- Section 8: Future Key Issues
- Section 9: Conclusions and Recommendations

2. Project Information

2.1 Background

2.1.1 Tung Chung Line Extension (TUE) was first initiated in the Railway Development Strategy 2014 (RDS-2014) announced by the Government of the Hong Kong Special Administrative Region, which includes the conceptual scheme of Tung Chung West (TCW) Extension and a possible Tung Chung East (TCE) Station.

2.1.2 The Tung Chung Line Extension (TUE) Project is an approximately 1.3km extension of the existing Tung Chung Line (TCL) with two new stations namely TCE Station and TCW Station.

2.1.3 The Environmental Impact Assessment (EIA) Reports for TUE (Register No.: AEIAR-235/2022) was approved on 12 July 2022 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Report, an Environmental Permit (EP) was granted on 9 August 2022 (EP No.: EP-614/2022), for the construction and operation.

2.1.4 According to the approved EM&A Manual of TUE, the EM&A monitoring for the Project includes air quality and noise monitoring. Baseline monitoring for TUE was carried out from Nov 2022 to Mar 2023.

2.2 General Description of the Project

2.2.1 The key elements of this Contract 1201 are comprise below:

- Extending the existing TCL from the existing overrun tunnel of TUC to the new TCW Station (in the form of a tunnel);
- Construction of a new TCW Station (underground) and overrun tunnel;
- Construction of the EAP/EEP building; and
- Construction of station associated facilities (entrances, vent shaft structures, etc.)

2.2.2 The layout plan of the Project is shown in **Figure 2.1**.

2.3 Construction Programme and Activities

2.3.1 The major construction activities undertaken in the reporting month are summarised below:

Table 2-1 Major Construction Activities in the Reporting Month

Location	Site Activities
TCW Area	• Site clearance at Yu Tung Road and transplantation • Construction of covered walkway for footbridge ramp demolition at Yu Tung Road • Site clearance, site formation and ground investigation at TCW • Preparation for site office setup
TCC and TCA Area	• Site clearance at TCC area • Site preparation at TCA area
Barging Facilities	• Site preparation

2.3.2 The tentative construction programmes is presented in **Appendix A**.

2.4 Project Organization

2.4.1 The project organization structure is shown in **Appendix B**. The key personnel contact names and numbers for the Project are summarized in **Table 2-2**.

Table 2-2 Contact Information of Key Personnel

Party	Role	Position	Name	Telephone	Fax
MTRC	Project Environmental Team	Project Environmental Team Leader	Mr. Edan Li	2688 1179	3761 4610
Meinhardt	Independent Environmental Checker	Independent Environmental Checker	Mr. Adi Lee	2859 5443	2540 1580
BDJV	Contractor	Project's Environmental Officer	Ms. Gena Tsang	9511 2283	2588 1979
AECOM	Contractor's Environmental Team (ET)	ET Leader	Ms. Lemon Lam	3922 9381	3922 9797
		Deputy ET Leader	Mr. Jimmy Lui	6067 5063	

2.5 Status of Environmental Licences, Notification and Permits

2.5.1 Relevant environmental licenses, permits and/or notifications on environmental protection for this Project and valid in the reporting month are summarized in **Table 2-3.**

Table 2-3 Status of Environmental Licenses, Notifications and Permits

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
Environmental Permit				
EP-614/2022	9 Aug 2022	-	Valid	-
Construction Noise Permit				
494944	-	-	Processing	Submitted and Processing by EPD on 20 July 2023
Wastewater Discharge License				
495010	-	-	Processing	Submitted and processing by EPD on 21 July 2023
495030	-	-	Processing	Submitted and processing by EPD on 24 July 2023
Chemical Waste Producer Registration				
5213-950-B2705-01	26 June 2023	-	Valid	-
Billing Account for Construction Waste Disposal				
7047572	1 June 2023	-	Valid	-
Notification Under Air Pollution Control (Construction Dust) Regulation				
492760	18 May 2023	-	Valid	-

3. Environmental Monitoring Requirement

3.1 Construction Dust Monitoring

Monitoring Requirements

3.1.1 In accordance with the approved EM&A Manual, 1-hour Total Suspended Particulates (TSP) level at the designated air quality monitoring station is required. Impact 1-hour TSP monitoring should be carried out for at least 3 times every 6 days. The Action and Limit level of the air quality monitoring is provided in **Appendix D**.

Monitoring Equipment

3.1.2 1-hour TSP air quality monitoring was performed using High Volume Sampler (HVS) located at the designated monitoring stations. The HVS meets all the requirements of the EM&A Manual. Brand and model of the equipment is given in **Table 3-1**.

Table 3-1 Air Quality Monitoring Equipment

Equipment	Brand and Model
High Volume Sampler (1-hour TSP)	Andersen Total Suspended Particulate Mass Flow Controlled High Volume Air Sampler (Model No. TE-5170 (S/N:10216, 3383))
Calibration Kit	TISCH Environmental Orifice (Model TE-5025A (Orifice I.D.: 988))

Monitoring Locations

3.1.3 The monitoring station for construction dust monitoring pertinent to the Project has been identified based on the approved EM&A Manual for TUE of the Project. As limitations and technical difficulties were identified, the alternative impact monitoring location at DM-5b has been proposed and approved by EPD on 30 May 2023. The location of the construction dust monitoring stations are summarised in **Table 3-2** and shown in **Figure 3.1**.

Table 3-2 Locations of Construction Dust Monitoring Station

Monitoring Location ID	Dust Monitoring Location
DM-4	Yat Tung Shopping Centre
DM-5b*	Ma Wan Chung Village

Remark: * - Alternative impact monitoring location.

Monitoring Methodology

3.1.4 1-hour TSP Monitoring

(a) The HVS was installed in the vicinity of the air sensitive receivers. The following criteria were considered in the installation of the HVS as far as practicable:-

(i) A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
(ii) Two samplers should not be placed less than 2m apart from each others;
(iii) The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
(iv) A minimum of 2 meters separation from walls, parapets and penthouse for rooftop sampler.
(v) A minimum of 2 meters separation from any supporting structure, measured horizontally is required.
(vi) No furnace or incinerator flues nearby.
(vii) Airflow around the sampler was unrestricted.
(viii) The sampler was located more than 20 meters from any dripline.
(ix) Any wire fence and gate, required to protect the sampler, did not obstruct the monitoring process.
(x) Permission was obtained to set up the samplers and access to the monitoring station.
(xi) A secured supply of electricity was obtained to operate the sampler.

(b) Preparation of Filter Papers

(i) Glass fibre filters, G810 were labelled and sufficient filters that were clean and without pinholes were selected.
(ii) All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±5%. A convenient working RH was 40%.
(iii) All filter papers were prepared and analysed by ALS Technichem (HK) Pty Ltd., which is a HOKLAS accredited laboratory and has comprehensive quality assurance and quality control programmes.

(c) Field Monitoring

(i) The power supply was checked to ensure the HVS works properly.
(ii) The filter holder and the area surrounding the filter were cleaned.
(iii) The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
(iv) The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
(v) The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied was sufficient to avoid air leakage at the edges.
(vi) Then the shelter lid was closed and was secured with the aluminium strip.
(vii) The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
(viii) A new flow rate record sheet was set into the flow recorder.
(ix) On site temperature and atmospheric pressure readings were taken and the flow rate of the HVS was checked and adjusted at around 1.3 m^3/min, and complied with the range specified in the EM&A Manual (i.e. 0.6-1.7 m^3/min).
(x) The programmable digital timer was set for a sampling period of 1 hrs, and the starting time, weather condition and the filter number were recorded.
(xi) The initial elapsed time was recorded.
(xii) At the end of sampling, on site temperature and atmospheric pressure readings were taken and the final flow rate of the HVS was checked and recorded.
(xiii) The final elapsed time was recorded.
(xiv) The sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact.
(xv) It was then placed in a clean envelope and sealed.
(xvi) All monitoring information was recorded on a standard data sheet.
(xvii) Filters were then sent to ALS Technichem (HK) Pty Ltd. for analysis.

(d) Maintenance and Calibration

(i) The HVS and its accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
(ii) HVSs were calibrated using TE-5025A Calibration Kit upon installation and thereafter at bi-monthly intervals.
(iii) Calibration certificate of the TE-5025A Calibration Kit and the HVSs are provided in **Appendix E**.

Monitoring Schedule for the Reporting Month

3.1.5 The impact monitoring on 17 July 2023 had been postponed to 18 July 2023 due to Typhoon Signal No. 8. The schedule for environmental monitoring in July 2023 is provided in **Appendix F**.

3.2 Construction Noise Monitoring

Monitoring Requirements

3.2.1 In accordance with the approved EM&A Manual, impact noise monitoring should be conducted for at least once a week during the construction phase of the Project. **Table 3-3** summarises the monitoring parameters, frequency and duration of impact noise monitoring. The Action and Limit level of the noise monitoring is provided in **Appendix D**.

Table 3-3 Noise Monitoring Parameters, Frequency and Duration

Parameter and Duration	Frequency
30-mins measurement at each monitoring station between 0700 and 1900 on normal weekdays. Leq, L_{10} and L_{90} would be recorded.	At least once per week

Monitoring Equipment

3.2.2 Noise monitoring was performed using sound level meter at each designated monitoring station. The sound level meters deployed comply with the International Electrotechnical Commission Publications (IEC) 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator was deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in **Table 3-4**.

Table 3-4 Noise Monitoring Equipment for Regular Noise Monitoring

Equipment	Brand and Model
Integrated Sound Level Meter	NTi XL2 (S/N: A2A-17440-EO)
Acoustic Calibrator	Model No. B&K 4231 (S/N: 3006428 & 3014024)

Monitoring Locations

3.2.3 The monitoring station for construction noise monitoring pertinent to the Project has been identified based on the approved EM&A Manual for TUE of the Project. Alternative impact monitoring location was proposed at NM3a due to safety considerations for monitoring at public accessible areas and was approved by EPD on 30 May 2022. The location of the construction noise monitoring station is summarised in **Table 3-5** and shown in **Figure 3.2**.

Table 3-5 Noise Monitoring Station during Construction Phase

Identification No.	Noise Monitoring Station
NM3a	2/F rooftop of Yat Tung Shopping Centre

Monitoring Methodology

3.2.4 Monitoring Procedure

(a) Façade measurement was made at NM3a.

(b) The battery condition was checked to ensure the correct functioning of the meter.

(c) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:

(i) frequency weighting: A
(ii) time weighting: Fast
(iii) time measurement: $L_{eq(30\text{-}minutes)}$ during non-restricted hours i.e. 0700 – 1900 on normal weekdays.

(d) Prior to and after each noise measurement, the meter was calibrated using the acoustic calibrator for 94 dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.

(e) During the monitoring period, the L_{eq}, L_{10} and L_{90} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.

(f) Noise measurement was paused during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible. Observations were recorded when intrusive noise was unavoidable.

(g) Noise monitoring was cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind with gusts exceeding 10m/s.

Maintenance and Calibration

3.2.5 Maintenance and Calibration procedures are as follows:

(a) The microphone head of the sound level meter and calibrator should be cleaned with a soft cloth at quarterly intervals.

(b) The meter and calibrator were sent to the supplier or HOKLAS laboratory to check and calibrate at yearly intervals.

(c) Relevant calibration certificates are provided in **Appendix E**.

Monitoring Schedule for the Reporting Month

3.2.6 The impact monitoring on 17 July 2023 had been postponed to 18 July 2023 due to Typhoon Signal No. 8. The schedule for environmental monitoring in July 2023 is provided in **Appendix F**.

4. Implementation Status of Environmental Mitigation Measures

4.1.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the EP and EM&A Manual. The implementation status of the environmental mitigation measures during the reporting period is summarized in **Appendix C**. Status of required submissions under the EP during the reporting period is summarised in **Table 4-1**.

Table 4-1 Status of Required Submission under Environmental Permit

EP Condition	Submission	Submission Date
Condition 3.4	Monthly EM&A Report (June 2023)	14 July 2023

5. Monitoring Results

5.1 Construction Dust Monitoring

5.1.1 The monitoring results for 1-hour TSP are summarised in **Table 5-1**. Detailed air quality monitoring results and wind monitoring data extracted from the Chek Lap Kok Automatic Weather Station operated by Hong Kong Observatory are presented in **Appendix G**.

Table 5-1 Summary of 1-hour TSP Monitoring Result in the Reporting Period

ID	Average ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
DM-4	56.7	23.8 – 127.8	312	500
DM-5b	54.4	24.4 – 133.4	333	500

5.1.2 No Action and Limit Level exceedance were recorded for 1-hour TSP monitoring in the reporting month.

5.1.3 The event and action plan is annexed in **Appendix I**.

5.1.4 Major dust sources during the monitoring included construction dust, nearby traffic emission and other nearby construction sites.

5.2 Regular Construction Noise Monitoring

5.2.1 The monitoring results for noise are summarized in **Table 5-2** and the monitoring data is provided in **Appendix H**.

Table 5-2 Summary of Construction Noise Monitoring Results in the Reporting Period

ID	Range, dB(A), $L_{eq\ (30\ mins)}$	Limit Level, dB(A), $L_{eq\ (30\ mins)}$
NM3a(*)	50.5 – 52.4	75

(*) Baseline correction will be made to the measured L_{eq} when the measured noise level exceeded the corresponding baseline noise level and presented in the table.

5.2.2 No Action and Limit Level exceedance of noise was recorded at the monitoring station in the reporting month.

5.2.3 The event and action plan is annexed in **Appendix I**.

5.2.4 Major noise sources during the monitoring included construction noise from the Project site, nearby traffic noise and the community.

5.3 Waste Management

5.3.1 C&D materials and wastes sorting were carried out on site. Receptacles were available for C&D wastes and general refuse collection.

5.3.2 As advised by the Contractor, 583.72 m^3 inert C&D material was generated and disposed of as public fill in the reporting month. 32.46 tonnes other wastes was generated and disposed into Y Park for recycling. No inert C&D materials were reused in other projects or in the Contract in the reporting month. No fill material was imported in the reporting month. 190.25 tonnes general refuse was generated in the reporting month. No paper/cardboard packaging material and plastic was collected by recycle contractor in the reporting month. No chemical waste and metal was collected by licensed contractor in the reporting month. The waste flow table is annexed in **Appendix L**.

5.3.3 The Contractor is advised to properly maintain on site C&D materials and wastes collection, sorting and recording system and maximize reuse / recycle of C&D materials and wastes. The Contractor is

reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and properly.

5.3.4 The Contractor is reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

5.3.5 All dump trucks for C&D materials transportation and disposal had equipped with Global Positioning System (GPS) for real-time tracking and monitoring of their travel routings and parking locations. According to the record of travel routings and parking locations of all dump trucks provided by the Contractor, no track deviation or abnormal parking location was observed during the reporting period.

5.4 Landscape and Visual

5.4.1 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 10 and 24 July 2023. A summary of the site inspection is provided on **Appendix C.** The observations and recommendations made during the site inspections are presented in **Table 6-1.**

6. Environmental Site Inspection and Audit

6.1.1 Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. A summary of the mitigation measures implementation schedule is provided in **Appendix C**.

6.1.2 In the reporting month, 5 site inspections were carried out on 3, 10, 19, 24 and 31 July 2023. Joint inspections with the IEC, ER, the Contractor and the ET were conducted on 10 July 2023. No non-compliance was recorded during the site inspection. Details of observations recorded during the site inspections are presented in **Table 6-1**.

Table 6-1 Observation and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Air Quality	3 July 2023	Reminder • The Contractor was reminded to replace NRMM Label for excavator at TCW area to fulfil the colour requirement of APCO.	NRMM label with correct color had been provided for the excavator at TCW area on 6 July 2023.
		Reminder • The Contractor was reminded to prevent dusty material spread out from the site boundary at Yu Tung Road.	The contractor had been arranged the regular cleaning for the footpath at Yu Tung Road on 4 July 2023.
	10 July 2023	Observation • Open stockpiles were observed at works site under Yu Tung Road footbridge, The Contractor should provide dust suppression measures (i.e cover the stockpiles) for the stockpile properly.	The open stockpiles had been removed and hard paving was provided for the works site area under Yu Ting Road footbridge on 19 July 2023.
	19 July 2023	Reminder • The Contractor was reminded to replace the NRMM label to fulfil the colour requirement of APCO near Yu Tung Road.	Proper NRMM labels had been displayed on carne near Yu Tung Road on 24 July 2023.
	24 July 2023	Reminder • The Contractor was reminded to keep proper record of water spraying.	Water spraying record for works area had been provided by Contractor on 29 July 2023.
	31 July 2023	Reminder • The Contractor was reminded to clear the dusty material in the cycle track at Yu Tung Road.	The clearance of dusty material in the cycle track at Yu Tung Road had been arranged by Contractor on 10 August 2023.
Noise	10 July 2023	Reminder • The Contractor was reminded to provide noise mitigation measures at TCW works site during GI Works.	Noise Barrier had been provided as noise mitigation measure at TCW works site during GI Works on 21 July 2023.
	31 July 2023	Reminder • The Contractor was reminded to proper maintain the movable noise barrier at TCC.	The Contractor maintained the movable noise barrier properly at TCC on 10 August 2023.

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	10 July 2023	Reminder The Contractor was reminded to provide sandbag to control surface runoff at TCW works site during GI Works.	Sandbag bunding around drilling hole to prevent water overflowing at TCW on 12 July 2023.
Waste/ Chemical Management	10 July 2023	Observation • Chemicals without drip tray were observed at TCW works site during GI Works, The Contractor should provide drip tray for the chemical storage properly.	Drip tray had been provided for the chemicals container at TCW on 12 July 2023.
		Reminder • Construction materials were observed at work site of TCC. The Contractor was reminded to provide proper handling of the materials for recycling.	The construction material had been removed from the work site of TCC on 19 July 2023.
Landscape & Visual	31 July 2023	Observation • The fully enclosed tree protection should be provided for retaining and transplant tree at Yu Tung Road.	The fully enclosed tree protection zone had been provided for retaining and transplant tree at Yu Tung Road on 7 August 2023.
Permits/ Licenses	Nil	Nil	Nil

6.1.3 All follow-up actions requested by Contractor's ET and IEC during the site inspection were undertaken as reported by the Contractor and confirmed in the following weekly site inspection conducted during the reporting period.

7. Environmental Non-Conformance

7.1 Summary of Monitoring Exceedances

7.1.1 No Action and Limit Level exceedance was recorded for 1-hour TSP monitoring in the reporting month.

7.1.2 No Action and Limit Level exceedance for noise was recorded at the monitoring station in the reporting month. Summary of Notification of Exceedance is provided in **Appendix K.**

7.2 Summary of Environmental Non-Compliance

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

7.3 Summary of Environmental Complaints

7.3.1 No environmental related complaint was received in the reporting month. Cumulative statistics on environmental complaints is provided in **Appendix J**.

7.4 Summary of Environmental Summon and Successful Prosecutions

7.4.1 No environmental related prosecution or notification of summons was received in the reporting month. Cumulative statistics on notification of summons and successful prosecutions is provided in **Appendix J**.

8. Further Key Issues

8.1 Construction Programme for the Next Three Month

8.1.1 The major construction works between August 2023 to October 2023 will be:

Table 8-1 Major Construction for the Next Three Month

Location	Site Activities
TCW Area	• Construction of covered walkway for footbridge ramp demolition at Yu Tung Road • Demolition of Yu Tung Road footbridge ramp • Site clearance, site formation and ground investigation at TCW • Preparation for station diaphragm wall construction • Setup of site office
TCC and TCA Area	• Site clearance at Shun Tung Road, TCC and TCA areas • Ground investigation and construction of pipe wall at TCC area • Site setup and ground investigation at TCA area
Barging Facilities	• Site preparation

8.2 Key Issues for the Coming Month

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

8.3 Monitoring Schedule for the Next Month

8.3.1 The tentative schedule for environmental monitoring in August 2023 is provided in **Appendix F**.

9. Conclusions and Recommendation

9.1 Conclusions

9.1.1 1-hour TSP and noise monitoring were carried out in the reporting month.

9.1.2 No Action and Limit Level exceedance was recorded for 1-hour TSP monitoring in the reporting month.

9.1.3 No Action and Limit Level exceedance for noise was recorded at the monitoring stations in the reporting month.

9.1.4 5 nos. of environmental site inspections were carried out in July 2023. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.

9.1.5 No complaint, notification of summons and successful prosecution were received in the reporting month.

9.2 Recommendations

9.2.1 According to the environmental site inspections performed in the reporting month, the following recommendations were provided:

Air Quality Impact

- Ensure the NRMM Label condition were compliance with the requirement of APCO.
- Provide dust suppression measure for dusty material and dried dusty road surface.
- Provide proper mitigation measure to prevent dusty material spread out from the site boundary.

Construction Noise Impact

- Provide Noise mitigation measures for the noisy works process.
- Properly maintain the movable noise barrier to ensure efficiency.

Water Quality Impact

- Provide proper bunding for GI works prevent surface runoff leak out.

Chemical and Waste Management

- Provide drip tray for the chemical containers or proper storage of the chemicals.
- Proper handle of the construction materials for recycling.

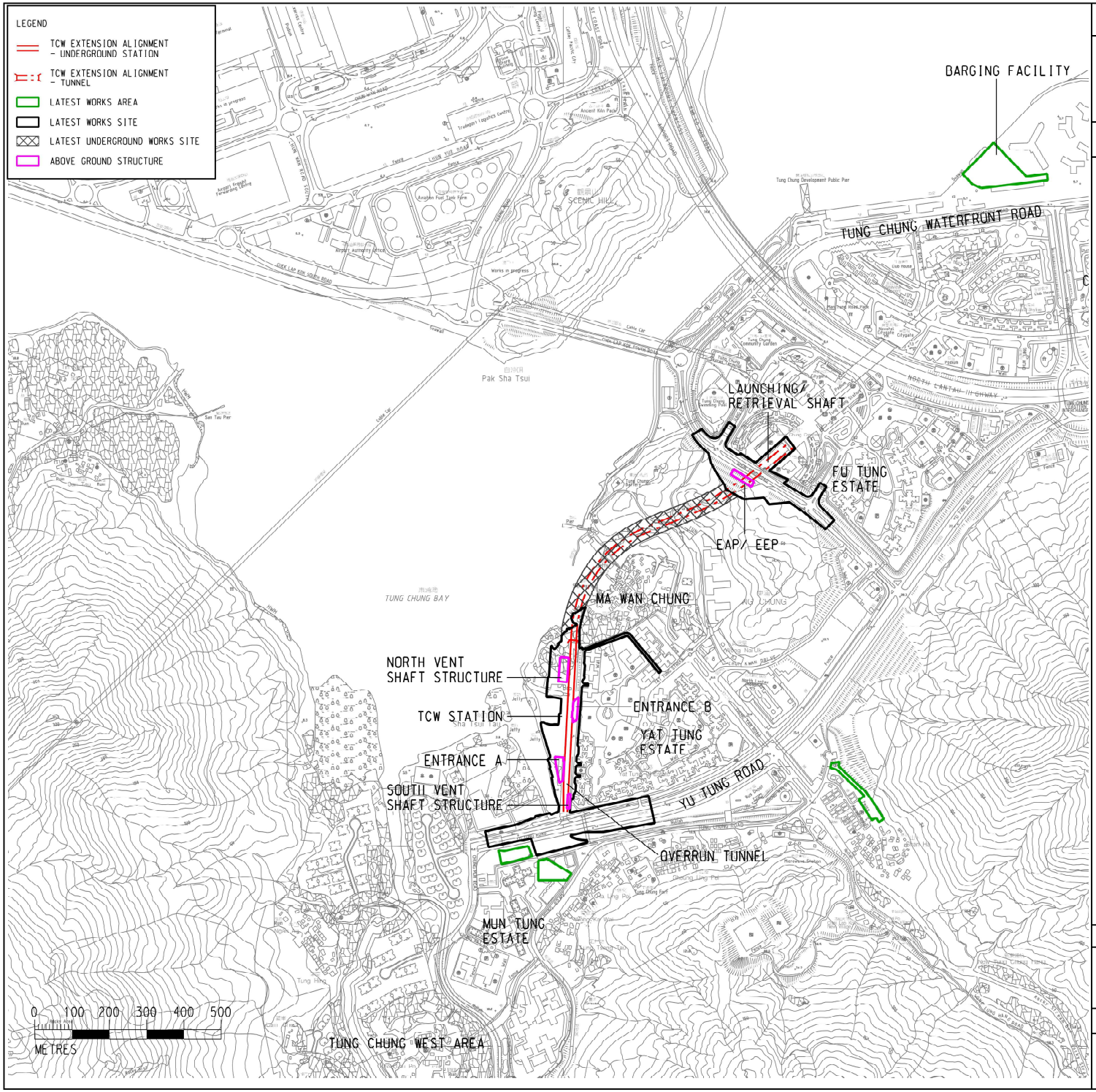
Landscape & Visual Impact

- Fully enclosed protection for retaining and transplant trees.

Permits/licenses

- No specific observation was identified in the reporting month.

FIGURES



Project Title

Tung Chung Line Extension – Contract 1201 Tung Chung West Station and Tunnels

Drawing Title

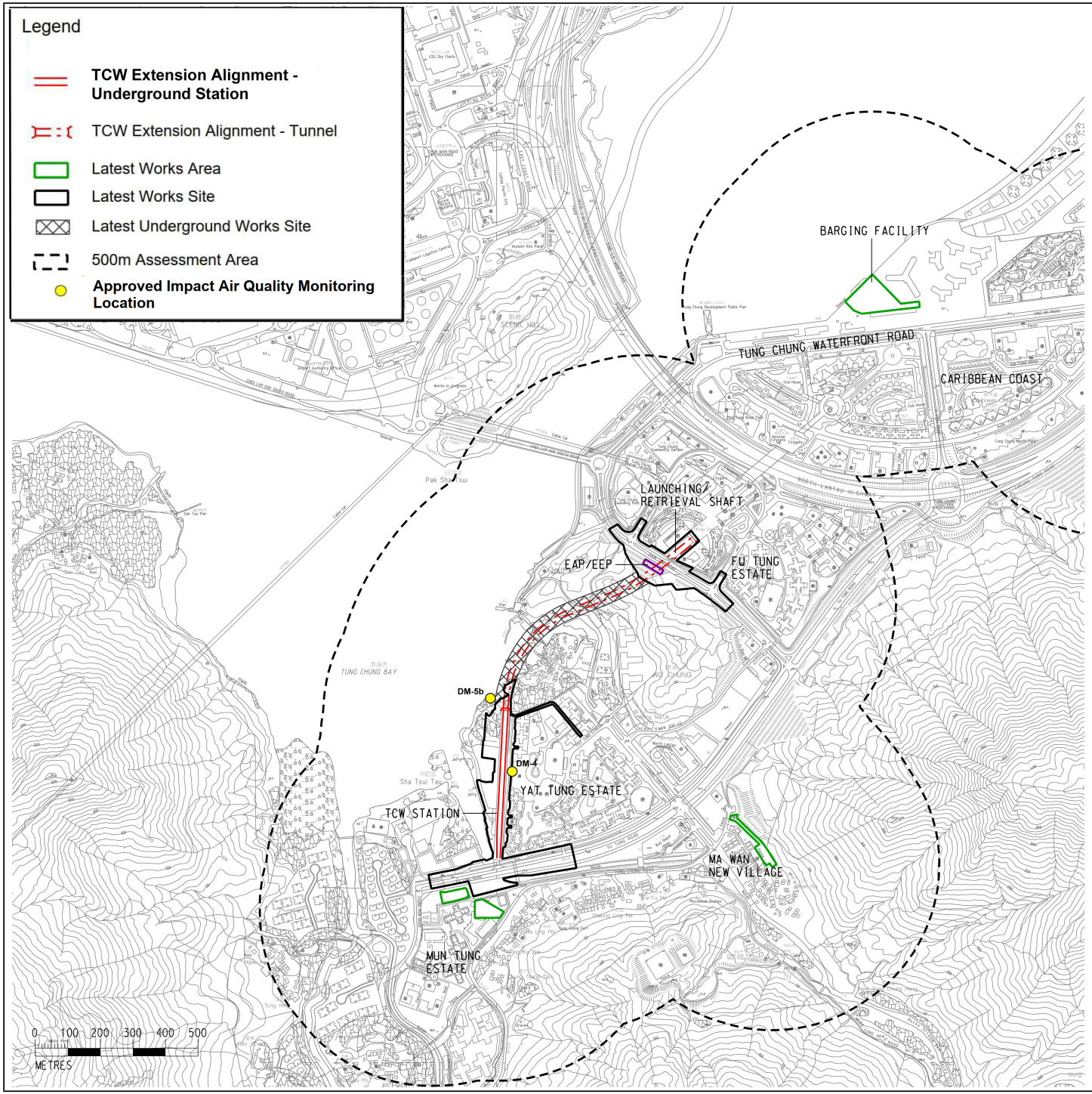
Site Layout Plan of Contract 1201

Drawing Number

Figure 2.1

Scale

As Shown



Project Title

Tung Chung Line Extension – Contract 1201 Tung Chung West Station and Tunnels

Drawing Title

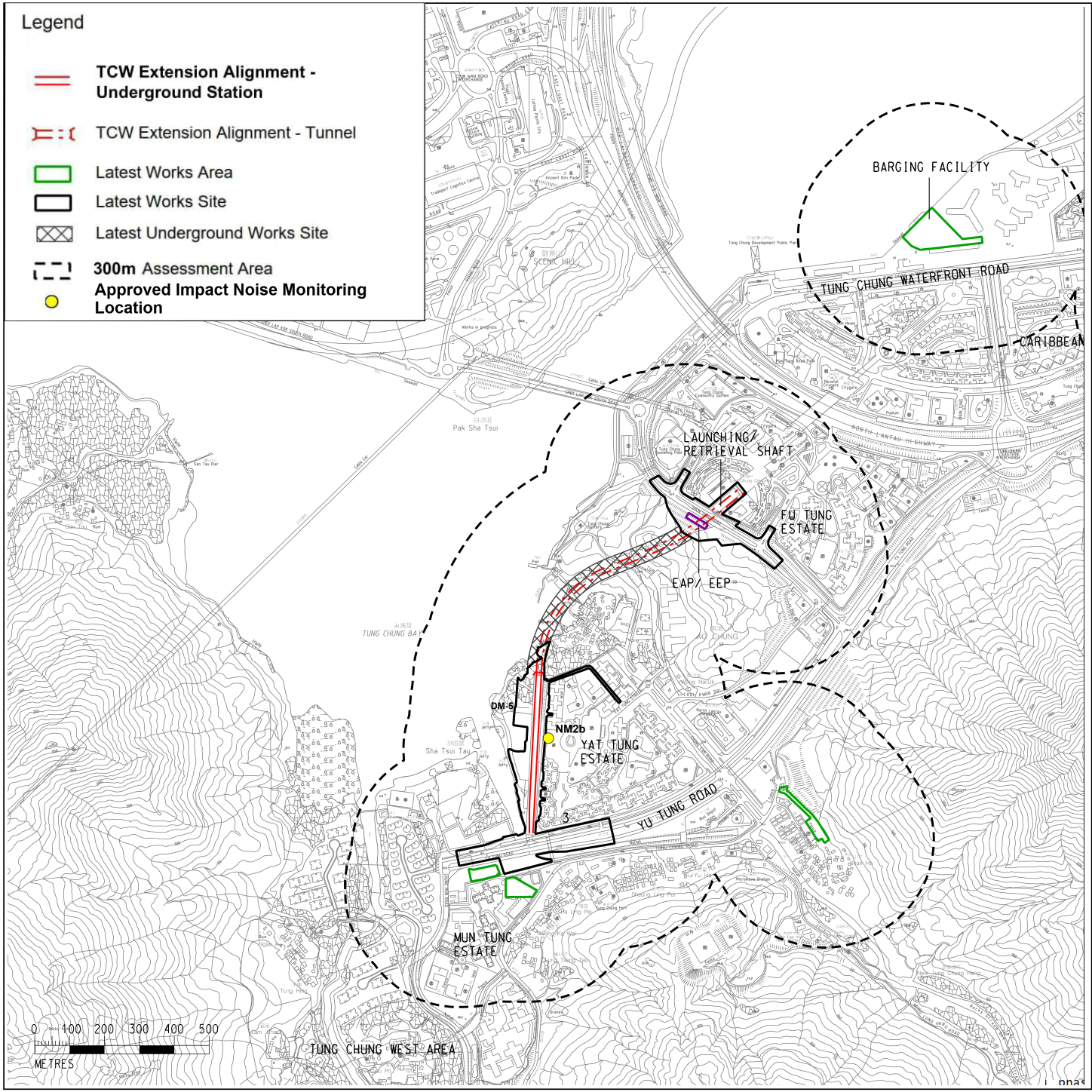
Locations of Construction Dust Monitoring Stations

Drawing Number

Figure 3.1

Scale

As Shown



Project Title

Tung Chung Line Extension – Contract 1201 Tung Chung West Station and Tunnels

Drawing Title

Locations of Airborne Construction Noise Monitoring Stations

Drawing Number

Figure 3.2

Scale

As Shown

APPENDIX A

Tentative Construction Programme

#	Activity Name
1	MTR 1201 TCW Station and Tunnels Revised Programme V3.1 (July 2023)
2	Civil Construction
3	Site Office
4	Civil Construction - TCW
5	Civil Construction - TCW - Yu Tung Road TTMS & Ramp Demolition
6	Civil Construction - TCW Station - Site Setup - Yu Tung Road Footbridge Ramp Demolition
7	Civil Construction - TCW - Dwall & Pile
8	Civil Construction - TCW - Dwall & Pile - Phase 1
9	Civil Construction - TCW - Dwall & Pile - Phase 1 - Site Setup
10	Civil Construction - TCW - Dwall & Pile - Phase 1 - Temporary Substation Setup [132kv]
11	Civil Construction - TCW - Dwall & Pile - Phase 1 - GI
12	Civil Construction - TCW - Dwall & Pile - Phase 1 - Pretreatment
13	Civil Construction - TCW - Dwall & Pile - Phase 1 - RW Grouting
14	Civil Construction - TCW - Dwall & Pile - Phase 2 - Zone 1
15	Civil Construction - TCW - Dwall & Pile - Phase 2 - Entrance A
16	Civil Construction - TCW - Dwall & Pile - Phase 2 - Zone 2
17	Civil Construction - TCW - Dwall & Pile - Phase 2 - Zone 3a
18	Civil Construction - TCW - Dwall & Pile - Phase 2 - Zone 3b
19	Civil Construction - TCC
20	Civil Construction - TCC - Shun Tung Rd TTMS Application
21	Civil Construction - TCC - Shun Tung Rd TTMS Setup
22	Civil Construction - TCC - Site Setup
23	Civil Construction - TCC - GI & Predrill
24	Civil Construction - TCC - Pre-treatment
25	Civil Construction - TCC - Pipe Pile Wall
26	Civil Construction - TCA
27	Civil Construction - TCA - Site Setup
28	Civil Construction - TCA - Temporary Substation Setup [132kv]
29	Civil Construction - TCA - GI & Predrill
30	Civil Construction - Tunnel
31	Civil Construction - Tunnel - Pre-treatment (If Any)
32	Civil Construction - Barging Point
33	Civil Construction - Barging Point - Foundation
34	Civil Construction - Barging Point - Setup

Planned

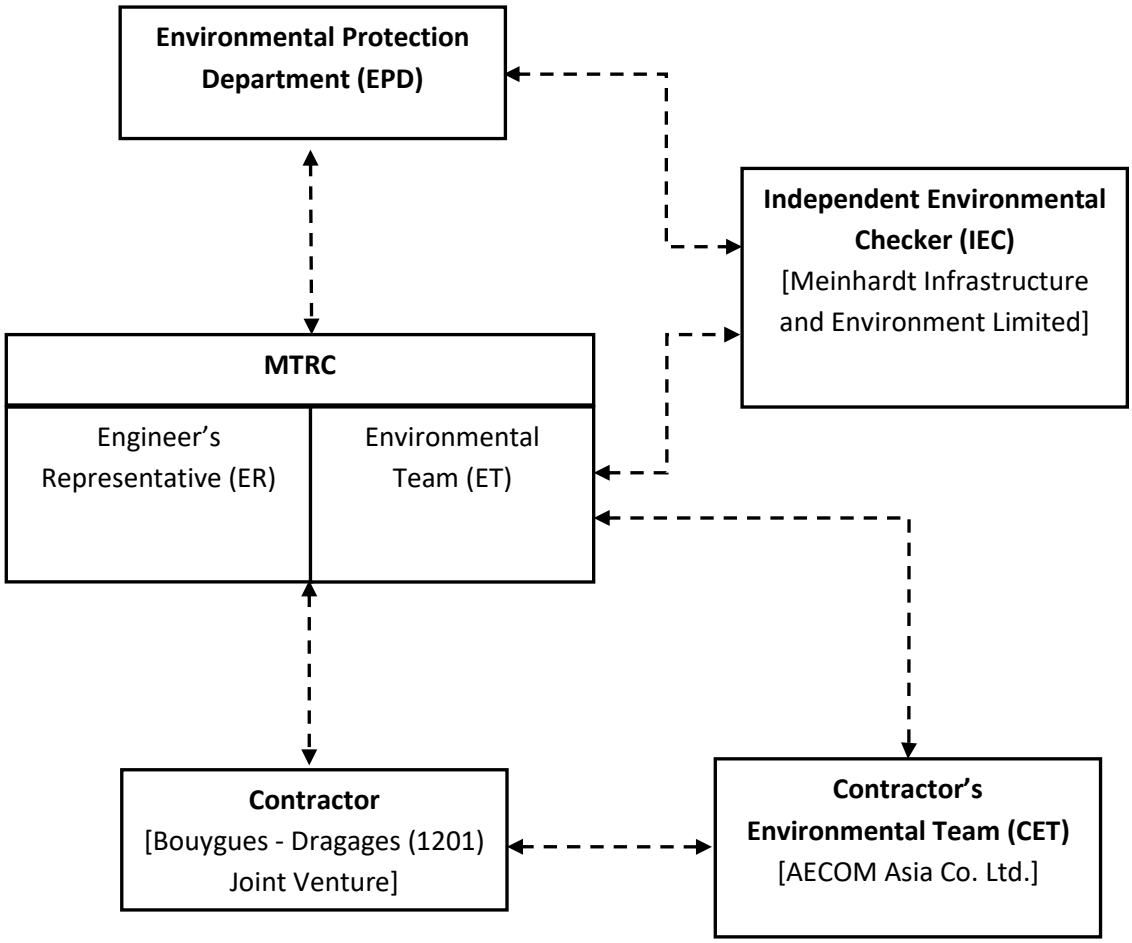
MTRC CONTRACT NO. 1201
TUNG CHUNG WEST STATION AND TUNNELS
3 Month Summary Programme (August 2023)

Bouygues - Dragages (1201) Joint Venture

APPENDIX B

Project Organization Structure

Appendix B Project Organization Structure



APPENDIX C

Implementation Schedule of Environmental Mitigation Measures

Appendix C Implementation Schedule of Environmental Mitigation Measures

EIA Ref.	EM&A log Ref.	Environmental Protection Measures during Construction Phase	Implementation Status
Environmental Permit Condition			
General Condition			
EP	**General Condition Clause 1.5**	The Permit Holder shall display conspicuously a copy of this Permit on the construction site(s) at all vehicular site always entrances/exits or at a convenient location for public's information. The Permit Holder shall ensure that the most updated information about this Permit, including any amended Permit, is displayed at such locations.	✓
Air Quality			
Construction Dust Impact			
S3.8.1	**D1**	• Regular watering once per hour on all exposed construction areas with dust emission and haul road will be implemented.	@
		• Vehicle washing facilities should be provided at every designated exit point of the construction worksites.	✓
		• Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable for the excavation or unloading.	✓
		• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads.	✓
		• A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones.	@
		• The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle.	✓
		• Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores.	✓
		• When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period.	N.A.
		• Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously.	N.A.
		• Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet.	N.A.
		• Where scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding.	N.A.
		• Dusty materials remaining after a stockpile is removed should be wetted with water.	✓
		• Any skip hoist for material transport should be totally enclosed by impervious sheeting.	✓
		• Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides.	✓
		• Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed.	✓
		• Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system.	N.A.
		• Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabilisers within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.	N.A.

EIA Ref.	EM&A log Ref.	Environmental Protection Measures during Construction Phase	Implementation Status
S3.8.1	**D1**	The following measures related to drill-&-blast activities should be incorporated: <u>Drill-&-blast Activities</u> • Any drill-&-blast activities should be conducted underneath the concrete slabs for concourses and platforms at the bottom of the TCW Station and underneath a roof cover at the bottom of the shaft between the proposed EAP / EEP and the tunnel. • Impermeable blast covers at the mucking out locations should be shut. • The blasting should only be carried out in a fully enclosed environment; • All neighbouring construction activities should be suspended during blasting; • The areas within 30m from the blasting area should be wetted with water prior to blasting and blasting shall not be carried out when the strong wind signal or tropical cyclone warning signal No. 3 or higher is hoisted; • Where necessary, mist spraying measures should be installed at the mucking out locations.	N.A.
		The following measures related to barging facilities should be incorporated: <u>Barging facilities</u> • All construction vehicles should be washed at the exit before leaving the construction worksites; • The entire area of the barging facility should be paved with concrete, bituminous materials or hardcores; • Regular watering once per hour on all exposed stockpiles. • The unloading points at the barging facility are recommended to be provided with an enclosed system with a 3-side screen with top cover and provision of water spraying system. • After unloading the spoil into barge inside the enclosed system, the trucks should be sprayed by water inside the unloading point. • If barges would need to stay overnight at the barging point, spoils on the deck of the barges shall be covered by tarpaulin to avoid dust emission.	N.A.
S3.8.2	**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; • Use cleaner fuel such as 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; and • Erect screen to shield the emission source from sensitive receivers where necessary and practicable.	@
S3.8.3	**D3**	Implement regular dust monitoring under EM&A programme during the construction phase.	✓

EIA Ref.	EM&A log Ref.	Environmental Protection Measures during Construction Phase	Implementation Status
Noise			
S4.4.4.4	**N1**	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 be throttled down to a minimum; • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers which available on construction equipment should be properly fitted and maintained during the construction works; • spoil transportation routes should be directed away from NSRs as far as practicable; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities; • noise monitoring at selected NSRs should be conducted as far as practicable; and • provide designated unloading areas at barging point away from the NSR as far as possible.	✓
S4.4.4.6	**N2**	• Use of quiet plant which 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.	N.A.
S4.4.4.7 – S4.4.4.10	**N3**	• Install movable temporary noise barriers (typical design is wooden framed barrier with a small-cantilevered upper portion of superficial density no less than 7kg/m^2 on a skid footing with 25mm thick internal sound absorptive lining), and full enclosure, screen the noisy plants including water pump etc.	@
S4.4.4.11	**N4**	Use of 3-side temporary movable enclosure to screen trench cutters and concrete lorry mixer near Yat Tung Estate. The design of the enclosure shall include the followings: • Gaps and openings at joints should be avoided; • Enclose the equipment on three sides with cover; and • Absorptive lining should be provided at the sides facing the PME as far as practicable.	✓
S4.4.4.12	**N5**	Installation of noise barrier along the western side of site boundary to screen noise for the village houses of Ma Wan Chung. The location of noise barrier is shown in the Figure 4.4.1 of the EIA report. The design of the noise barrier should include the followings: • Gaps and openings at joints should be avoided; • The length of the barrier should be about 27m while the height should be about 4m; and • Surface density of the barrier no less than 7kg/m^2.	✓
S4.4.4.4	**N6**	• Implement an airborne construction noise monitoring under EM&A programme.	✓
Water Quality			
S5.7.1	**W1**	General Construction Activities 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: • All effluent discharged from the construction site should comply with the standards stipulated in the DSS-TM; • Discharge surface and road runoff from construction sites including barging point into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps, and sedimentation tanks with sufficient retention time. Provide channels or earth bunds or sandbag barriers on-site during construction works to properly direct stormwater to such silt removal facilities.	@

EIA Ref.	EM&A log Ref.	Environmental Protection Measures during Construction Phase	Implementation Status
S5.7.1	**W1**	Provide perimeter channels on-site boundaries where necessary to intercept storm runoff from outside the site so that it will not wash across the site. Install catch pits and perimeter channels in advance of site formation works and earthworks; • Covered the temporarily exposed slope surfaces e.g. by a tarpaulin. • Protect the temporary access roads by crushed stone or gravel, as excavation proceeds as far as practicable. Install intercepting channels (e.g. along the crest/edge of excavation) to prevent storm runoff from washing across exposed soil surfaces. Carried out adequate surface protection measures safely well before the arrival of a rainstorm; • Compact the final surfaces of earthworks properly and execute the subsequent permanent work or surface protection immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Install appropriate drainage like intercepting channels where necessary; • If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections as far as practicable to minimize the ingress of rainwater into trenches. Discharge the rainwater pumped out from trenches or foundation excavations into storm drains via silt removal facilities; • Cover the open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites with tarpaulin or similar fabric during rainstorms; • Cover and temporarily sealed manholes (including newly constructed ones) adequately so as to prevent silt, construction materials, or debris from getting into the drainage system, and to prevent storm runoff from getting into foul sewers. Avoid discharging surface runoff into foul sewers in order not to unduly overload the foul sewerage system; and • Clean the construction sites on a regular basis (e.g. remove the rubbish and litter from the construction sites).	
S5.7.1	**W1**	Recondition and reuse the bentonite wherever practicable to minimise the disposal volume of used bentonite slurries. Provide temporary enclosed storage locations on-site for any unused bentonite that needs to be transported away after the related construction activities are completed. The process of handling and disposing of bentonite slurries should follow the requirements as stipulated in ProPECC PN 1/94: <u>Handling and Disposing of Bentonite Slurries</u> • Bentonite slurries used in diaphragm wall and bore-pile construction should be reconditioned and reused wherever practicable. If the disposal of at the marine spoil quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subject to obtaining a marine dumping licence from EPD on a case-by-case basis. • If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewers, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards.	N.A.
S5.7.2	**W2**	<u>Mitigation measures/ enhancement measures for TCW Area</u> • Install a barrier such as sheet pile/hoarding with concrete footing along the western boundary of the construction site/works areas. This barrier shall be able to contain the surface run-off from releasing to the estuary in an uncontrolled manner during heavy rainfall; • Contractor should apply for a discharge licence under the WPCO and conduct necessary water quality measurements at the discharge location(s) to demonstrate compliance with the licence conditions; and • Maintain the silt removal facilities, channels, and manholes and remove the deposited silt and grit regularly, at the onset of and after each rainstorm to prevent local flooding if necessary.	N.A.

EIA Ref.	EM&A log Ref.	Environmental Protection Measures during Construction Phase	Implementation Status
S5.7.3	**W3**	Mitigation measures for Barging Point • Maintain adequate clearance between vessels and the seabed in all tide conditions to minimise undue turbidity generated by turbulence from vessel movement or propeller wash; and • Control the loading of barges and hoppers to prevent the splashing of material into the surrounding water. Barges or hoppers should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation.	N.A.
S5.7.4	**W4**	Wastewater Discharge from Tunnelling and Open Cut Excavation • Treat the wastewater, especially with a high level of suspended solids, by settling tanks with sufficient retention time before discharging to the stormwater drain; • Remove oil, lubricants, and grease from wastewater by oil interceptors whenever necessary; and • Apply for a discharge licence under the Water Pollution Control Ordinance (WPCO) for discharging to the stormwater drain.	N.A.
S5.7.5	**W5**	Alteration of Groundwater Level • Install groundwater monitoring wells as a precautionary measure in the area closed to TBM and other potential underground works; and • An action plan is recommended to guide the work arrangement in case of appearing change of groundwater level.	N.A.
S5.7.6	**W6**	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 registered 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.	✓
S5.7.7	**W7**	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; • 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; • Storage area should be selected at a safe location on-site and adequate space should be allocated to the storage area; • Sufficient ground investigation and soil testing should be carried out; • All charted drill holes should be checked by engineer to ensure proper seal up prior to the TBM passing; and • The Contractor should devise a contingency plan for any accidental spillage and heavy rainfall event.	@

EIA Ref.	EM&A log Ref.	Environmental Protection Measures during Construction Phase	Implementation Status
Waste Management			
S6.2.3.2	**WM1**	Good Site Practices 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, arrangements for collection and effective disposal to an appropriate facility, of all wastes 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 either covering trucks or by transporting wastes in enclosed containers; • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; • Provision of wheel washing facilities at the site exit before the trucks leave the works areas; and • The Contractor should prepare a Waste Management Plan (WMP) as part of the Environmental Management Plan (EMP) in accordance with the ETWB TCW No. 19/2005. The WMP should be submitted to the Engineer for approval. Mitigation measures proposed in the EIA Report and the EM&A Manual should be adopted.	✓
S6.2.3.3	**WM2**	Waste Reduction Measures 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; • Proper storage and good site practices to minimize the potential for damage and contamination of construction materials; • Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste; • Sort out demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (i.e. soil, broken concrete, metal etc.); and • Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.	✓
S6.2.3.4 – S6.2.3.8	**WM3**	Storage, Collection and Transportation of Waste The following recommendation should be implemented to minimise the impacts from storage, collection and transportation of waste: • Non-inert C&D materials such as top soil should be handled and stored well to ensure secure containment of the materials; • Stockpiling area should be provided with covers and water spraying system to prevent materials from windblown or being washed away; and • 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; • Disposal of waste should be done at licensed waste disposal facilities; • All dump trucks engaged on site for delivery of inert C&D material from the site to PFRFs should be equipped with GPS or equivalent system for tracking and monitoring of their travel routings and parking locations by the Contractor. The data collected by GPS or equivalent system should be recorded properly for checking and analysis by ET and IEC; • A Construction and Demolition Material Management Plan (C&DMMP) should be prepared in accordance with Section 4.1.3 “Construction and Demolition Materials” of the Project Administration Handbook for Civil Engineering Works and will be submitted together with the EIA Report to Public Fill Committee (PFC) for approval; • Carry out on-site sorting for C&D materials;	✓

EIA Ref.	EM&A log Ref.	Environmental Protection Measures during Construction Phase	Implementation Status
S6.2.3.4 – S6.2.3.8	**WM3**	• Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate.	
		Implement a trip-ticket system for each works contract in accordance with DEVB TCW No. 06/2010: Trip-Ticket System • CHIT in lieu of DDF shall be used at public fill facilities, sorting facilities, outlying island transfer facilities and landfills for disposal tracking purpose shall be used and the associated duties and responsibilities of supervisory staff in enforcing the TTS are revised. • The Contractor shall propose only private construction sites, private recycling facilities, or construction sites of Government, Hong Kong Housing Authority and Mass Transit Railway Corporation as alternative disposal grounds. • In assessing proposal for alternative disposal ground, the Architect/ Engineer/ Supervising Office/ Maintenance Surveyor shall consult the relevant Government department and seek the approval of a D2 officer or above from his/her department.	✓
S6.2.3.10 – S62.3.12	**WM4**	On-site Sorting of C&D Materials • Storage areas should be provided in the site for temporary storage of inert C&D materials during construction phase. • 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 as far as practicable. • Non-inert portion of C&D materials should be reused whenever possible and be disposal of at landfills as a last resort. • The Contractor should devise 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 stockpiling on-site. The system should include the identification of the source of generation, estimated quantity, arrangement for onsite sorting and/ or collection, temporary storage areas, and frequency of collection by recycling contractors or frequency of removal off-site.	N.A.
S6.2.3.13	**WM5**	Reuse of C&D Materials • Reuse suitable inert C&D materials on-site as far as practicable; • 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.	@
S6.2.3.15	**WM6**	Specification of Inert C&D Materials to be Delivered Off-site 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.	N.A.
S6.2.3.17	**WM7**	Use of Standard Formwork and Planning of Construction Materials purchasing • Standard formwork should also be used as far as practicable to minimise the arising of non-inert C&D materials; • Use of more durable formwork (e.g. metal hoarding) or plastic facing should be encouraged in order to enhance the possibility of recycling; and • Purchasing of construction materials should be carefully planned in order to avoid over ordering and wastage.	N.A.
S6.2.3.18 – S6.2.3.20	**WM8**	Land-based Marine Sediment • Excavated land-based marine sediment should be reused as far as possible within the Project Site before considering disposal. Marine disposal option for the land-based marine sediment should only be considered as the last resort upon exhaustion of reuse options. • All construction plant and equipment shall be designed and maintained to minimise the risk of sediments being released into the water column or deposited in the locations other than designated location. • All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to	N.A.

EIA Ref.	EM&A log Ref.	Environmental Protection Measures during Construction Phase	Implementation Status
S6.2.3.18 – S6.2.3.20	**WM8**	minimise that undue turbidity is not generated by turbulence from vessel movement or propeller wash. • Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action. • The Contractor shall monitor all vessels transporting the excavated sediment. The Contractor shall keep and produce logs and other records to demonstrate compliance and that journeys are consistent with designated locations and copies of such records shall be submitted to the Engineers. • The Contractor shall comply with the conditions in the dumping permit issued under the Dumping at Sea Ordinance (DASO). • All bottom dumping vessels (hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material. • The excavated sediment shall be placed into the disposal pit by bottom dumping. • Discharge shall be undertaken rapidly and the hoppers shall be closed immediately. Sediment adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site.	
S6.2.3.21	**WM9**	If mixing of land-based marine sediment with cement is to be used for backfilling on-site, the following mitigation measures should be followed. • The loading, unloading, handling, transfer or storage of bulk cement should be carried out in an enclosed system as far as practicable; • Mixing process and other associated material handling activities should be properly scheduled to minimise potential noise impact and dust emission; and • The mixing facilities should be sited as far apart as practicable from the nearby NSRs and to be sited under covers to minimise dust nuisance to the nearby receivers.	N.A.
S6.2.3.22 – S6.2.3.23	**WM10**	<u>Chemical Waste</u> • Reduce the generation quantities or select a chemical type of less impact on environment, health and safety as far as possible; and • If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producer. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste collector. Chemical wastes (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, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	✓
S6.2.3.24 – S6.2.3.25	**WM11**	<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 areas clean; • A reputable waste collector should be employed to remove general refuse on a daily basis; • Arrangements should be made with the recycling companies to collect the recycle waste as required; • The Contractor should implement an education programme for workers relating to avoiding, reducing, reusing and recycling general waste; and • Participation in a local collection scheme should be considered by the Contractor to facilitate waste reduction.	✓
<u>Ecology</u>			
S8.9.1	**E1**	• Avoidance of marine works.	✓
S8.9.1	**E3**	• Avoidance of works within intertidal zone of Tung Chung Bay.	✓
S8.9.1	**E4**	• Avoidance of country parks, SSSI, CA and CPA.	✓
S8.9.1	**E5**	• Avoidance of mature woodland.	✓
S8.9.1	**E6**	• Avoidance of re-diversion of Wong Lung Hang Nullah.	✓

EIA Ref.	EM&A log Ref.	Environmental Protection Measures during Construction Phase	Implementation Status
S8.9.7 **S8.9.7**	**E7** **E7**	• A protection zone should be set up for one individual of Aquilaria sinensis and Canthium Dicoccum on the plantation slope along Shun Tung Road.	N.A.
S8.9.11	**E8**	Minimisation of Human Disturbance during Construction • Install site hoarding of appropriate height along site boundaries; • Construction activities and material storage should be strictly confined within the construction sites; and • For TCW section, dedicated access to the nearby ecologically sensitive areas outside of the construction sites, works areas, and works sites is not allowed due to the proximity to the Wong Lung Hang estuary and Tung Chung Bay.	N.A.
Landscape and Visual			
S10.8.2	**LV1**	Tree Preservation • Existing trees to be retained within the Project Site shall be protected carefully during construction.	@
S10.8.2	**LV2**	Tree Transplanting • Trees unavoidably affected by the Project works shall be transplanted where practical. Approximately 170 nos. of trees are proposed to be transplanted at Shun Tung Road and Yu Tung Road.	✓
S10.8.2	**LV3**	Landscape Reinstatement • All hard and soft landscape areas disturbed temporarily during construction shall be reinstated on like-to-like basis as far as possible, to the satisfaction of the relevant Government Departments.	N.A.
S10.8.2	**LV4**	Lighting Control • All security floodlights for construction sites should be carefully controlled to minimize light pollution and night time glare to nearby users.	N.A.
S10.8.2	**LV5**	Erection of Screen Hoarding • Construction site hoarding should be erected around the work sites and work areas to screen pedestrian level views into the construction area from visual sensitive receivers. Hoarding design shall be compatible with the surrounding context as far as practicable	N.A.
S10.8.2	**LV6**	Optimization of Construction Areas • Control of construction areas shall be enforced, where possible, to ensure that the landscape and visual impacts arising from the construction activities are minimised. It includes optimising the extent of working areas and temporary works areas, management on storing and using the construction equipment and materials, and consideration of detailed schedules to shorten the construction period.	N.A.
Cultural Heritage			
S11.5.5	**CH1**	Terrestrial Archaeology • Conduct field scan, 6 auger tests and 2 test pit excavations within the area of archaeological interest by a qualified archaeologist who obtains a licence under the Antiquities and Monuments Ordinance (Cap. 53). Locations and scope should be agreed with AMO prior to implementation. The exact locations of the auger tests and test pits would be subject to site circumstances and constraints. Subject to the findings of the further archaeological testing, options for mitigation measures such as in-situ preservation, relocation and preservation by record etc would be fully investigated and agreed with AMO.	N.A.

EIA Ref.	EM&A log Ref.	Environmental Protection Measures during Construction Phase	Implementation Status
S11.5.5	**CH2**	Terrestrial Archaeology • 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.	N.A.
Hazard to Life			
S12.3.2.1	**H1**	Design Measures • Implement emergency plan for efficient excavation including good practice; • Adopt site-sensitised bulk emulsion explosives for blasting; • No overnight storage of explosives; • Provide impermeable blast covers for the TCW Station and EAP/ EEP; • Prior to blasting, all the construction workforce for EAP/EEP and TCW station shall be evacuated and all the impermeable blast covers shall be closed; • Limit to one blast per day for each blasting location (i.e. total of two blasts each day for the entire project).	✓
S12.3.2.2	**H2**	Good Site Practices • Temporary mitigation measures such as blast doors or heavy duty blast curtains should be installed at the access adits, shafts/ portals and at suitable locations underground to prevent flyrock and control the air overpressure; • Blasting at different locations will be carried out for this project. Good communication and control will need to be adopted in ensuring that the works are carried out safely; • A Chief Shotfirer and a Blasting Engineer shall be employed in addition to the normal blasting personnel to ensure that the works are coordinated between blasting areas and between adjacent contracts; • Shotfirer to be provided with a lightning detector, and appropriate control measures should be in place; • Provide full-time supervision and blast checking by Blast Competent Supervisors (BCS) as mentioned in Project Administration Handbook for Civil Engineering Works; • Checking (including both document and site checks) for each blast including the installation of protective, precautionary, preventive measures, comply with the Blasting Permit requirements; • Inspecting the condition of all sensitive receivers before and after each blast; • Inspecting the construction of preventive works, if required, for the sensitive receivers; • Monitoring the site operations and working methods to ensure that they meet the safety requirements set out in the Blasting Permit; • Inspect consequence-to-life category 1 and 2 slopes that are subjected to significant blasting vibration before and after each blast; • Limit blast charge weight based on the allowable Peak Particle Velocity (PPV) for the controlling sensitive receivers surrounding the site; • Monitor regularly the condition of all sensitive receivers and carry out inspections and reviews before and after each blast; • Resolve any stability concerns observed at the slopes (e.g. persistent adverse discontinuity or other adverse geology, or loose boulders or other objects on the slope that could become unstable) before blasting; • Ensure that any blasting carried out will not adversely affect services, slopes, retaining walls, buildings and structures through ground vibrations or other effects; • Ensure that adequate and necessary preventive, protective and precautionary measures are provided to prevent the works from causing injury to workers and the public, significant disruption to traffic, undue vibration and movement to existing structures and services, or undue nuisance to the public.	N.A.

*Note: N.A = Not Available; N.O = Not Observed, ✓ = Implemented; ✗ = Not Implemented; @ = Partially Implemented

APPENDIX D

Summary of Action and Limit Levels

Appendix D – Summary of Action and Limit Levels

Table 1 Action and Limit Levels for 1-hour TSP

ID	Location	Action Level	Limit Level
DM-4	Yat Tung Shopping Centre	312 $\mu g/m^3$	500 $\mu g/m^3$
DM-5b	Ma Wan Chung Village	333 $\mu g/m^3$	500 $\mu g/m^3$

Table 2 Action and Limit Levels for Construction Noise (0700 – 1900 hrs of normal weekdays)

ID	Location	Action Level	Limit Level
NM3a	2/F rooftop of Yat Tung Shopping Centre	When one documented complaint is received	75 dB(A)

APPENDIX E

Calibration Certificates of Equipments

AECOM Asia Company Limited
Tisch TSP Mass Flow Controlled High Volume Air Sampler
Field Calibration Report

Station	Yat Tung Shopping Centre (DM-4)	Operator:	Shum Kam Yuen
Cal. Date:	5/6/2023	Next Due Date:	5/8/2023
Model No.:	TE-5170	Serial No.	10216
Equipment No.:	A-001-53T		

Ambient Condition			
Temperature, Ta (K)	303.0	Pressure, Pa (mmHg)	754.7

Orifice Transfer Standard Information					
Serial No:	988	Slope, mc	1.98736	Intercept, bc	-0.02635
Last Calibration Date:	28-Jun-22	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	28-Jun-23				

Calibration of TSP Sampler

Resistance Plate No.	Orifice			HVS Flow Recorder	
	DH (orifice), in. of water	$[DH \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m^3/min) X - axis	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) Y-axis
18	6.9	2.60	1.32	44.0	43.48
13	5.8	2.38	1.21	39.0	38.54
10	5.0	2.21	1.13	35.0	34.59
7	4.0	1.98	1.01	30.0	29.65
5	3.1	1.74	0.89	24.0	23.72

By Linear Regression of Y on X

Slope , mw = 45.5113 **Intercept, bw =** -16.5407

Correlation Coefficient* = 0.9994

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m^3/min

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

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

Therefore, Set Point; IC = (mw x Qstd + bw) x [(760 / Pa) x (Ta / 298)]$^{1/2}$= **43.13**

Remarks:

QC Reviewer: IVIS CHAN Signature: Date: 05/06/23

AECOM Asia Company Limited
Tisch TSP Mass Flow Controlled High Volume Air Sampler
Field Calibration Report

Station	Ma Wan Chung Village (DM-5b)	Operator:	Shum Kam Yuen
Cal. Date:	5/6/2023	Next Due Date:	5/8/2023
Model No.:	TE-5170	Serial No.	3383
Equipment No.:	A-001-78T		

Ambient Condition			
Temperature, Ta (K)	303.0	Pressure, Pa (mmHg)	754.7

Orifice Transfer Standard Information					
Serial No:	988	Slope, mc	1.98736	Intercept, bc	-0.02635
Last Calibration Date:	28-Jun-22	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	28-Jun-23				

Calibration of TSP Sampler

Resistance Plate No.	Orifice			HVS Flow Recorder	
	DH (orifice), in. of water	$[DH \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m^3/min) X-axis	Flow Recorder Reading (CFM)	Continuous Flow Recorder Reading IC (CFM) Y-axis
18	7.0	2.61	1.33	45.0	44.47
13	5.9	2.40	1.22	40.0	39.53
10	5.0	2.21	1.13	36.0	35.58
7	4.1	2.00	1.02	31.0	30.64
5	3.0	1.71	0.87	25.0	24.71

By Linear Regression of Y on X

Slope , mw = 43.5863 **Intercept, bw =** -13.5703

Correlation Coefficient* = 0.9994

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.30m^3/min

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

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

Therefore, Set Point; $IC = (mw \times Qstd + bw) \times [(760 / Pa) \times (Ta / 298)]^{1/2} =$ **43.60**

Remarks:

QC Reviewer: WS CHAN Signature: Date: 05/06/23

TISCH Environmental

RECALIBRATION DUE DATE:
June 28, 2023

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	June 28, 2022	**Rootsmeter S/N:** 438320	**Ta:** 296	°K
Operator:	Jim Tisch		**Pa:** 755.4	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **0988**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3700	3.2	2.00
2	3	4	1	0.9730	6.4	4.00
3	5	6	1	0.8710	7.9	5.00
4	7	8	1	0.8310	8.8	5.50
5	9	10	1	0.6830	12.7	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
0.9964	0.7273	1.4147	0.9958	0.7268	0.8853
0.9922	1.0197	2.0007	0.9915	1.0190	1.2520
0.9902	1.1368	2.2368	0.9895	1.1361	1.3997
0.9890	1.1901	2.3460	0.9884	1.1894	1.4680
0.9838	1.4405	2.8294	0.9832	1.4395	1.7705
QSTD	**m=**	**1.98736**	**QA**	**m=**	**1.24445**
	b=	**-0.02635**		**b=**	**-0.01649**
	r=	**0.99994**		**r=**	**0.99994**

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

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 23CA0427 01-01 **Page** 1 **of** 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone	Preamp
Manufacturer:	Nti	,	Nti Andio	Nti Andio
Type/Model No.:	XL2	,	MC230A	MA220
Serial/Equipment No.:	A2A-17440-EO	,	A18423	9087
Adaptors used:	-	,		

Item submitted by

Customer Name:	AECOM
Address of Customer:	-
Request No.:	-
Date of receipt:	27-Apr-2023

Date of test: 29-Apr-2023

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-Aug-2023	CIGISMEC
Signal generator	DS 360	61227	08-Jun-2023	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1005 ± 5 hPa

Test specifications

1, The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.

2, The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.

3, The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsess of the Sound Level Meter.

Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory: Feng Junqi **Date:** 02-May-2023 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument. The results apply to the item as received.

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 23CA0427 01-01 **Page** 2 **of** 2

1, Electrical Tests

The electrical tests were perfomed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	0.8	2.1
	Lin	Pass	1.6	2.2
Linearity range for Leq	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
Frequency weightings	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100μs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor $1/10^3$ at 4kHz	Pass	0.3	
	1 ms burst duty factor $1/10^4$ at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by: Fung Chi Yip **Date:** 29-Apr-2023

Checked by: Chan Yuk Yiu **Date:** 02-May-2023

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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Tel: (852) 2873 6860 Fax: (852) 2555 7533 E-mail: smec@cigismec.com Website: www.cigismec.com

SMECLab

Sound level meter type: XL2 Serial No. A2A-17440-EO Date 29-Apr-2023
Microphone type: MC230A Serial No. A18423
Report: 23CA0427 01-01

SELF GENERATED NOISE TEST

The noise test is performed in the most sensitive range of the SLM with the microphone replaced by an equivalent impedance.

Noise level in A weighting	10.4	dB
Noise level in C weighting	15.3	dB
Noise level in Lin	22.5	dB

LINEARITY TEST

The linearity is tested relative to the reference sound pressure level using a continuous sinusoidal signal of frequency 4 kHz. The measurement is made on the reference range for indications at 5 dB intervals starting from the 94 dB reference sound pressure level. And until within 5 dB of the upper and lower limits of the reference range, the measurements shall be made at 1 dB intervals.(SLM set to LEQ/SPL)

Reference/Expected level	Actual level		Tolerance	Deviation	
	non-integrated	integrated		non-integrated	integrated
dB	dB	dB	+/- dB	dB	dB
94.0	94.0	94.0	0.7	0.0	0.0
99.0	99.0	99.0	0.7	0.0	0.0
104.0	104.0	104.0	0.7	0.0	0.0
109.0	109.0	109.0	0.7	0.0	0.0
114.0	114.0	114.0	0.7	0.0	0.0
115.0	115.0	115.0	0.7	0.0	0.0
116.0	116.0	116.0	0.7	0.0	0.0
117.0	117.0	117.0	0.7	0.0	0.0
118.0	118.0	118.0	0.7	0.0	0.0
119.0	119.0	119.0	0.7	0.0	0.0
120.0	120.0	120.0	0.7	0.0	0.0
89.0	89.0	89.0	0.7	0.0	0.0
84.0	84.0	84.0	0.7	0.0	0.0
79.0	79.0	79.0	0.7	0.0	0.0
74.0	74.0	74.0	0.7	0.0	0.0
69.0	69.0	69.0	0.7	0.0	0.0
64.0	64.0	64.0	0.7	0.0	0.0
59.0	59.0	59.0	0.7	0.0	0.0
54.0	54.0	54.0	0.7	0.0	0.0
49.0	49.0	49.0	0.7	0.0	0.0
44.0	44.0	44.0	0.7	0.0	0.0
39.0	39.0	39.0	0.7	0.0	0.0
34.0	34.1	34.1	0.7	0.1	0.1
33.0	33.1	33.1	0.7	0.1	0.1

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SMECLab

Sound level meter type: XL2 Serial No. A2A-17440-EO Date 29-Apr-2023
Microphone type: MC230A Serial No. A18423
Report: 23CA0427 01-01

32.0	32.1	32.1	0.7	0.1	0.1
31.0	31.2	31.2	0.7	0.2	0.2
30.0	30.2	30.2	0.7	0.2	0.2

Measurements for an indication of the reference SPL on all other ranges which include it

Other ranges	Expected level	Actual level	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
40-140	94.0	94.0	0.7	0.0
20-120	94.0	94.0	0.7	0.0
0-100	94.0	94.0	0.7	0.0

Measurements on all level ranges for indications 2 dB below the upper limit and 2 dB above the lower limit

Ranges	Reference/Expected level	Actual level	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
40-140	50.0	50.7	0.7	0.7
	138.0	138.0	0.7	0.0
20-120	30.0	30.2	0.7	0.2
	118.0	118.0	0.7	0.0
0-100	30.0	30.0	0.7	0.0
	98.0	98.0	0.7	0.0

FREQUENCY WEIGHTING TEST

The frequency response of the weighting netwoks are tested at octave intervals over the frequency ranges 31.5 Hz to 12500 Hz. The signal level at 1000 Hz is set to give an indication of the reference SPL.

Frequency weighting A:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
Hz	dB	dB	dB	+	-	dB
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	54.6	54.5	1.5	1.5	-0.1
63.1	94.0	67.8	67.7	1.5	1.5	-0.1
125.9	94.0	77.9	77.8	1.0	1.0	-0.1
251.2	94.0	85.4	85.3	1.0	1.0	-0.1
501.2	94.0	90.8	90.8	1.0	1.0	0.0
1995.0	94.0	95.2	95.2	1.0	1.0	0.0
3981.0	94.0	95.0	95.0	1.0	1.0	0.0
7943.0	94.0	92.9	92.9	1.5	3.0	0.0
12590.0	94.0	89.7	89.5	3.0	6.0	-0.2

Frequency weighting C:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
Hz	dB	dB	dB	+	-	dB

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SMECLab

Sound level meter type: XL2 Serial No. A2A-17440-EO Date 29-Apr-2023
Microphone type: MC230A Serial No. A18423
Report: 23CA0427 01-01

1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	91.0	90.9	1.5	1.5	-0.1
63.1	94.0	93.2	93.1	1.5	1.5	-0.1
125.9	94.0	93.8	93.8	1.0	1.0	0.0
251.2	94.0	94.0	94.0	1.0	1.0	0.0
501.2	94.0	94.0	94.0	1.0	1.0	0.0
1995.0	94.0	93.8	93.8	1.0	1.0	0.0
3981.0	94.0	93.2	93.2	1.0	1.0	0.0
7943.0	94.0	91.0	91.0	1.5	3.0	0.0
12590.0	94.0	87.8	87.6	3.0	6.0	-0.2

Frequency weighting Lin:

Frequency	Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
Hz	dB	dB	dB	+	-	dB
1000.0	94.0	94.0	94.0	0.0	0.0	0.0
31.6	94.0	94.0	93.8	1.5	1.5	-0.2
63.1	94.0	94.0	93.9	1.5	1.5	-0.1
125.9	94.0	94.0	93.9	1.0	1.0	-0.1
251.2	94.0	94.0	94.0	1.0	1.0	0.0
501.2	94.0	94.0	94.0	1.0	1.0	0.0
1995.0	94.0	94.0	94.0	1.0	1.0	0.0
3981.0	94.0	94.0	94.0	1.0	1.0	0.0
7943.0	94.0	94.0	94.0	1.5	3.0	0.0
12590.0	94.0	94.0	93.9	3.0	6.0	-0.1

Note: No corrections for the frequency response of the microphone, instrument case and windshield are made to the sound level meter.

TIME WEIGHTING FAST TEST

Time weighting F is tested on the reference range with a single sinusoidal burst of duration 200 ms at a frequency 2000 Hz and an amplitude which produces an indication 4 dB below the upper limit of the primary indicator range when the signal is continuous. (Weight A, Maximum hold)

Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
dB	dB	dB	+	-	dB
116.0	115.0	114.9	1.0	1.0	-0.1

TIME WEIGHTING SLOW TEST

Time weighting S is tested on the reference range with a single sinusoidal burst of duration 500 ms at a frequency 2000 Hz and an amplitude which produces an indication 4 dB below the upper limit of the primary indicator range when the signal is continuous. (Weight A, Maximum hold)

Ref. level	Expected level	Actual level	Tolerance(dB)		Deviation
dB	dB	dB	+	-	dB
116.0	111.9	111.8	1.0	1.0	-0.1

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SMECLab

Sound level meter type: XL2 Serial No. A2A-17440-EO Date 29-Apr-2023

Microphone type: MC230A Serial No. A18423

Report: 23CA0427 01-01

PEAK RESPONSE TEST

The onset time of the peak detector is tested on the reference range by comparing the response to a 100 us rectangular test pulse with the response to a 10 ms reference pulse of the same amplitude. The amplitude of the 10 ms reference pulse is such as to produce an indication 1 dB below the upper limit of the primary indicator range.

Positive polarities: (Weighting Z, set the generator signal to single, Lzpeak)

Ref. level	Response to 10 ms	Response to 100 us	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
119.0	119.0	118.6	2.0	-0.4

Negative polarities:

Ref. level	Response to 10 ms	Response to 100 us	Tolerance	Deviation
dB	dB	dB	+/- dB	dB
119.0	119.0	118.6	2.0	-0.4

RMS ACCURACY TEST

The RMS detector accuracy is tested on the reference range for a crest factor of 3.

Test frequency: 2000 Hz
Amplitude: 2 dB below the upper limit of the primary indicator range.
Burst repetition frequency: 40 Hz
Tone burst signal: 11 cycles of a sine wave of frequency 2000 Hz. (Set to INT)

	Ref. Level	Expected level	Tone burst signal	Tolerance	Deviation
Time wighting	dB	dB	indication(dB)	+/- dB	dB
Slow	118.0+6.6	118.0	117.9	0.5	-0.1

TIME WEIGHTING IMPULSE TEST

Time weighting I is tested on the reference range (Set the SLM to LAImax)

Test frequency: 2000 Hz
Amplitude: The upper limit of the primary indicator range.

Single sinusoidal burst of duration 5 ms:

Ref. Level	Single burst indication		Tolerance	Deviation
dB	Expected (dB)	Actual (dB)	+/- dB	dB
120.0	111.2	111.1	2.0	-0.1

Repeated at 100 Hz

Ref. Level	Repeated burst indication		Tolerance	Deviation
dB	Expected (dB)	Actual (dB)	+/- dB	dB
120.0	117.3	117.2	1.0	-0.1

TIME AVERAGING TEST

This test compares the SLM reading for continuous sine signals with readings obtained from a sine tone burst sequence having the same RMS level. The test level is 30 dB below the upper limit of the linearity range and repeated for Type 1 SLM with 40 dB below the upper limit of the linearity.

Frequency of tone burst: 4000 Hz

Duration of tone burst: 1 ms

Repetition Time	Level of tone burst	Expected Leq	Actual Leq	Tolerance	Deviation	Remarks

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SMECLab

Sound level meter type: XL2 Serial No. A2A-17440-EO Date 29-Apr-2023

Microphone type: MC230A Serial No. A18423

Report: 23CA0427 01-01

msec	dB	dB	dB	+/- dB	dB	
1000	90.0	90.0	89.9	1.0	-0.1	60s integ.
10000	80.0	80.0	79.9	1.0	-0.1	6min. integ.

PULSE RANGE AND SOUND EXPOSURE LEVEL TEST

The test tone burst signal is superimposed on a baseline signal corresponding to the lower limit of reference range

Test frequency: 4000 Hz

Integration time: 10 sec

The integrating sound level meter set to Leq:

Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10	88.0	58.0	58.0	1.7	0.0

The integrating sound level meter set to SEL:

Duration	Rms level of	Expected	Actual	Tolerance	Deviation
msec	tone burst (dB)	dB	dB	+/- dB	dB
10.0	88.0	68.0	68.0	1.7	0.0

OVERLOAD INDICATION TEST

For SLM capable of operating in a non-integrating mode.

Test frequency: 2000 Hz

Amplitude: 2 dB below the upper limit of the primary indicator range.

Burst repetition frequency: 40 Hz

Tone burst signal: 11 cycles of a sine wave of frequency 2000 Hz.

Level	Level reduced by	Further reduced	Difference	Tolerance	Deviation
at overload (dB)	1 dB	3 dB	dB	dB	dB
121.2	120.2	117.2	3.0	1.0	0.0

For integrating SLM, with the instrument indicating Leq.

For integrating SLM, with the instrument indicating Leq and set to the reference range. The test signal as following:

The test tone burst signal is superimposed on a baseline signal corresponding to the lower limit of reference range

Test frequency: 4000 Hz

Integration time: 10 sec

Single burst duration: 1 msec

Rms level	Level reduced by	Expected level	Actual level	Tolerance	Deviation
at overload (dB)	1 dB	dB	dB	dB	dB
127.4	126.4	86.4	86.4	2.2	0.0

ACOUSTIC TEST

The acoustic test of the complete SLM is tested at the frequency 125 Hz and 8000 Hz using a B&K type 4226 Multifunction Acoustic Calibrator. The test is performed in A weighting.

Frequency	Expected level	Actual level	Tolerance (dB)		Deviation
Hz	dB	Measured (dB)	+	-	dB

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SMECLab

Test Data for Sound Level Meter

Sound level meter type: XL2 Serial No. A2A-17440-EO Date 29-Apr-2023
Microphone type: MC230A Serial No. A18423
Report: 23CA0427 01-01

1000	94.0	94.0	0.0	0.0	0.0
125	77.9	77.9	1.0	1.0	0.0
8000	92.9	93.1	1.5	3.0	0.2

---------END---------

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 23CA0427 01-03 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	B & K
Type/Model No.:	4231
Serial/Equipment No.:	3006428
Adaptors used:	-

Item submitted by

Curstomer:	AECOM
Address of Customer:	-
Request No.:	-
Date of receipt:	27-Apr-2023

Date of test: 29-Apr-2023

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	23-May-2023	SCL
Preamplifier	B&K 2673	2743150	28-Jun-2023	CEPREI
Measuring amplifier	B&K 2610	2346941	30-Jun-2023	CEPREI
Signal generator	DS 360	61227	08-Jun-2023	CEPREI
Digital multi-meter	34401A	US36087050	30-May-2023	CEPREI
Audio analyzer	8903B	GB41300350	06-Jul-2023	CEPREI
Universal counter	53132A	MY40003662	13-Jun-2023	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1005 ± 5 hPa

Test specifications

1, The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.

2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.

3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on **page 2** of this certificate.

Approved Signatory: Feng Junqi **Date:** 02-May-2023 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Comments: The results reported in this certificate refer to the conditon of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 23CA0427 01-03 **Page:** 2 **of** 2

1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

(Output level in dB re 20 μPa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	94.22	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz **STF = 0.016 dB**

Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz **Actual Frequency = 1000.0 Hz**

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz **TND = 0.7 %**

Estimated expanded uncertainty 0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by: Fung Chi Yip **Date:** 29-Apr-2023

Checked by: Chan Yuk Yiu **Date:** 02-May-2023

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are carry no implication regarding the long-term stability of the instrument. The results apply to the item as received.

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HOKLAS 028
CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 22CA1110 01-02 **Page:** 1 **of** 2

Item tested

Description:	Acoustical Calibrator (Class 1)
Manufacturer:	B & K
Type/Model No.:	4231
Serial/Equipment No.:	3014024 / N004.04
Adaptors used:	-

Item submitted by

Curstomer:	AECOM ASIA CO LIMITED
Address of Customer:	-
Request No.:	-
Date of receipt:	10-Nov-2022

Date of test: 11-Nov-2022

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	23-May-2023	SCL
Preamplifier	B&K 2673	2743150	28-Jun-2023	CEPREI
Measuring amplifier	B&K 2610	2346941	30-Jun-2023	CEPREI
Signal generator	DS 360	33873	21-Jan-2023	CEPREI
Digital multi-meter	34401A	US36087050	30-May-2023	CEPREI
Audio analyzer	8903B	GB41300350	06-Jul-2023	CEPREI
Universal counter	53132A	MY40003662	13-Jun-2023	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1005 ± 5 hPa

Test specifications

1, The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.

2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.

3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on **page 2** of this certificate.

Approved Signatory: Feng Junqi **Date:** 12-Nov-2022 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

Comments: The results reported in this certificate refer to the conditon of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument. The results apply to the item as received.

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 22CA1110 01-02 **Page:** 2 **of** 2

1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

(Output level in dB re 20 μPa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	94.03	0.10

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz **STF = 0.014 dB**

Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz **Actual Frequency = 1000.0 Hz**

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz **TND = 0.6 %**

Estimated expanded uncertainty 0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by: Fung Chi Yip **Date:** 11-Nov-2022

Checked by: Chan Yuk Yiu **Date:** 12-Nov-2022

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

APPENDIX F

EM&A Monitoring Schedules

Appendix F
Contract 1201 - Tung Chung West Station and Tunnels
Impact Monitoring Schedule for July 2023

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Jul
2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	8-Jul
			Air Quality Noise			
9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	15-Jul
		Air Quality Noise				
16-Jul	17-Jul	18-Jul	19-Jul	20-Jul	21-Jul	22-Jul
	Typhoon Signal No.8	Air Quality Noise				Air Quality
23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul	29-Jul
					Air Quality Noise	
30-Jul	31-Jul					

Appendix F
Contract 1201 - Tung Chung West Station and Tunnels
Tentative Impact Monitoring Schedule for August 2023

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

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

APPENDIX G

Air Quality Monitoring Results and their Graphical Presentations

Appendix G
1-hour TSP Impact Monitoring Result for
Tung Chug Line Extension - Contract 1201 Tung Chung West Station and Tunnels

DM-4 Yat Tung Shopping Centre

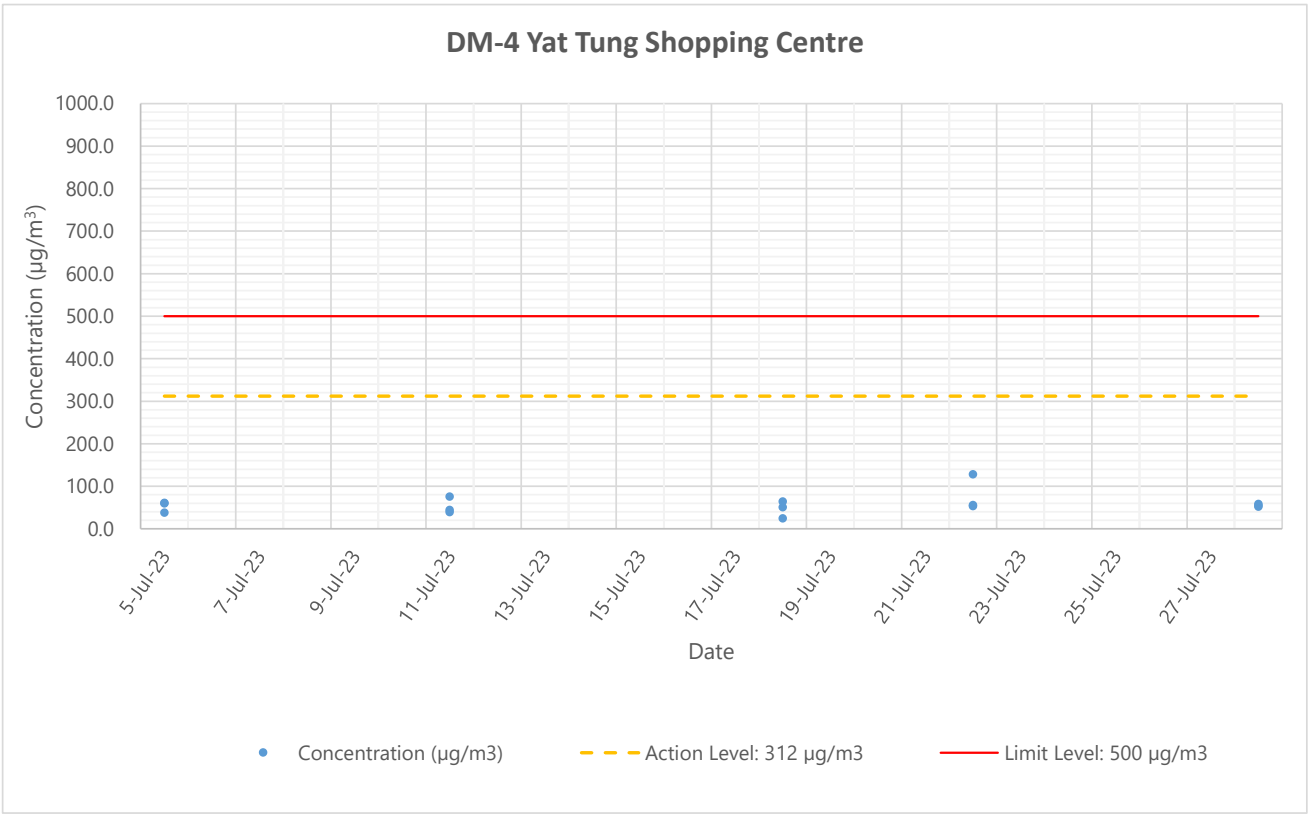
1-hour TSP (μg/m³)									
Date	**Start Time**	**1st hr**	**Start Time**	**2nd hr**	**Start Time**	**3rd hr**	**Action Level**	**Limit Level**	**Weather**
5 Jul 2023	9:00	37.6	13:30	58.9	14:50	60.2	312	500	Sunny
11 Jul 2023	9:00	43.9	13:00	38.8	14:10	75.2			Sunny
18 Jul 2023	9:00	23.8	11:10	50.1	13:40	63.9			Cloudy
22 Jul 2023	9:00	55.1	11:00	127.8	13:40	52.6			Sunny
28 Jul 2023	9:00	57.6	12:35	51.4	13:40	53.9			Fine

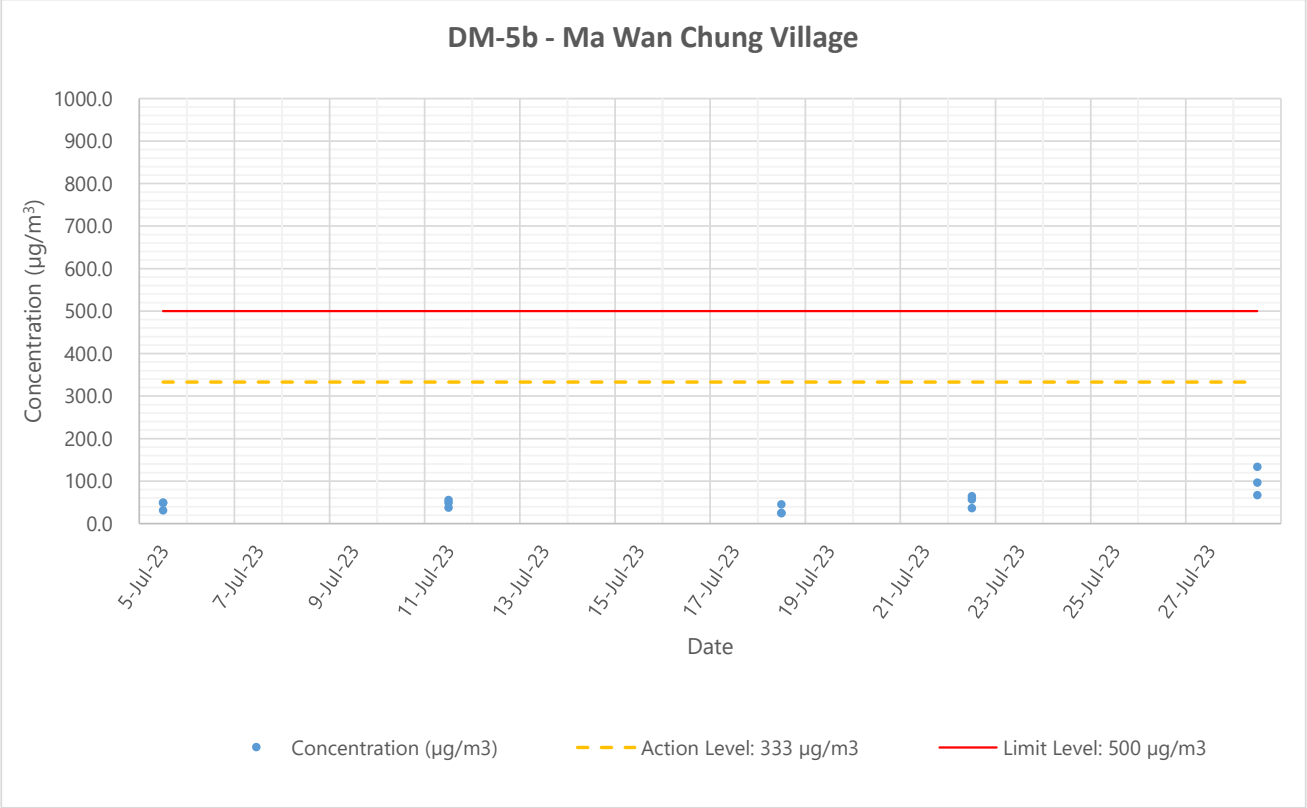
Average	56.7
Max	127.8
Min	23.8

DM-5b - Ma Wan Chung Village

1-hour TSP (μg/m³)									
Date	**Start Time**	**1st hr**	**Start Time**	**2nd hr**	**Start Time**	**3rd hr**	**Action Level**	**Limit Level**	**Weather**
5 Jul 2023	9:00	30.8	13:55	48.8	15:10	48.8	333	500	Sunny
11 Jul 2023	9:00	48.8	13:20	37.2	14:30	55.2			Sunny
18 Jul 2023	9:00	24.4	10:50	24.4	13:20	44.9			Cloudy
22 Jul 2023	9:00	35.9	10:40	56.5	13:20	64.2			Sunny
28 Jul 2023	9:00	96.2	12:20	66.7	13:25	133.4			Fine

Average	54.4
Max	133.4
Min	24.4





Tung Chung Line Extension - Contract No. 1201

Tung Chung West Station and Tunnels

AECOM

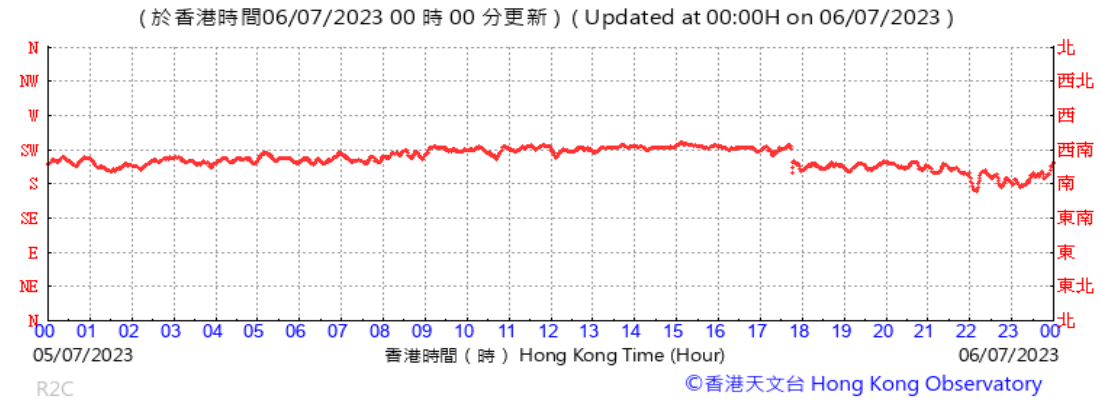
Graphical Presentation of Impact 1-hr TSP Monitoring Results

Date: **August 2023**

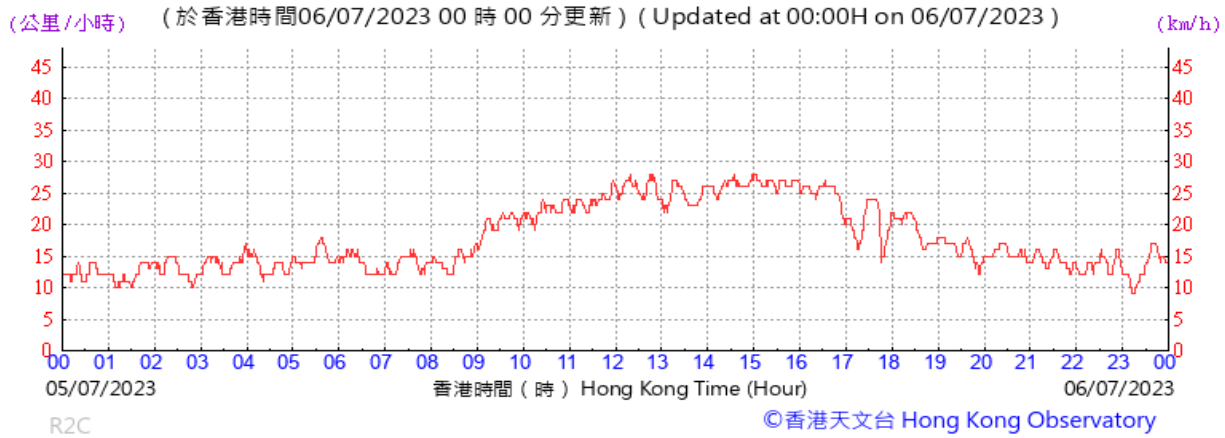
Appendix G

Appendix G – Extract of Meteorological Observations for Chek Lap Kok Automatic Weather Station
July 2023

Wind Direction:

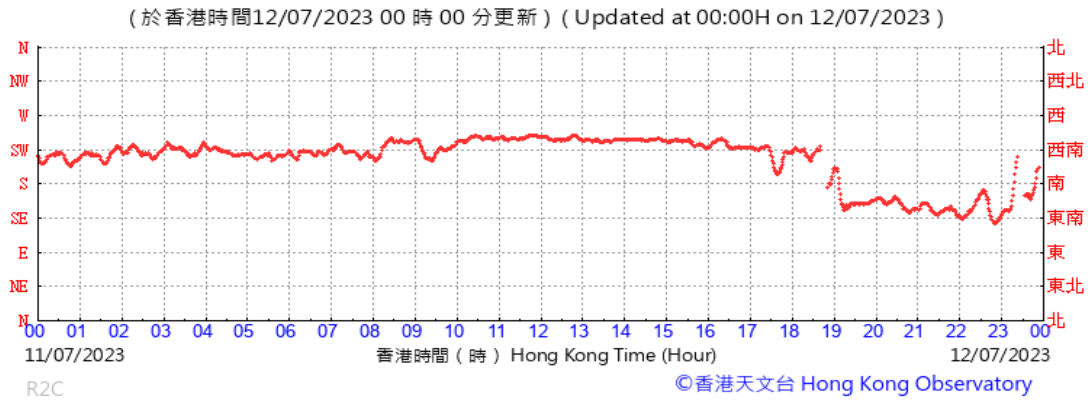


Wind Speed:

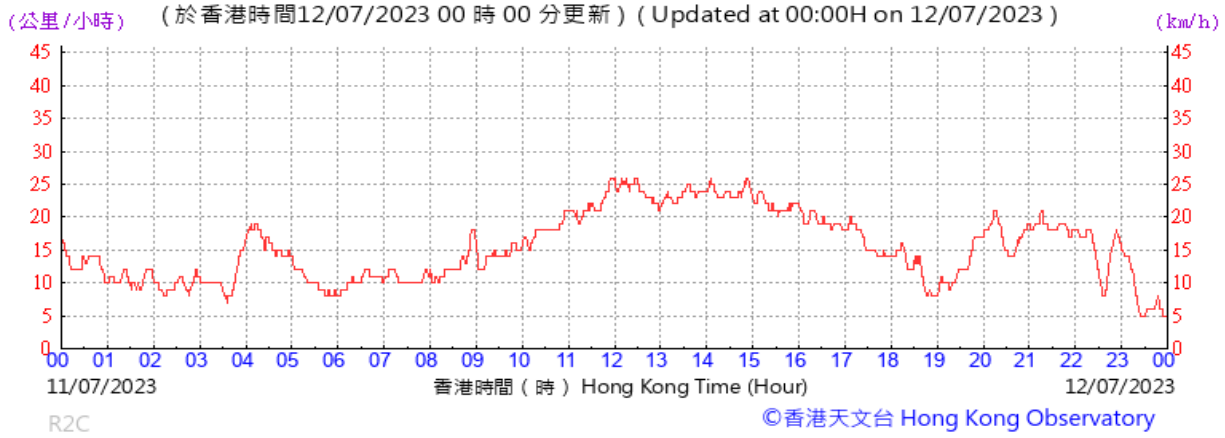


Appendix G – Extract of Meteorological Observations for Chek Lap Kok Automatic Weather Station
July 2023

Wind Direction:

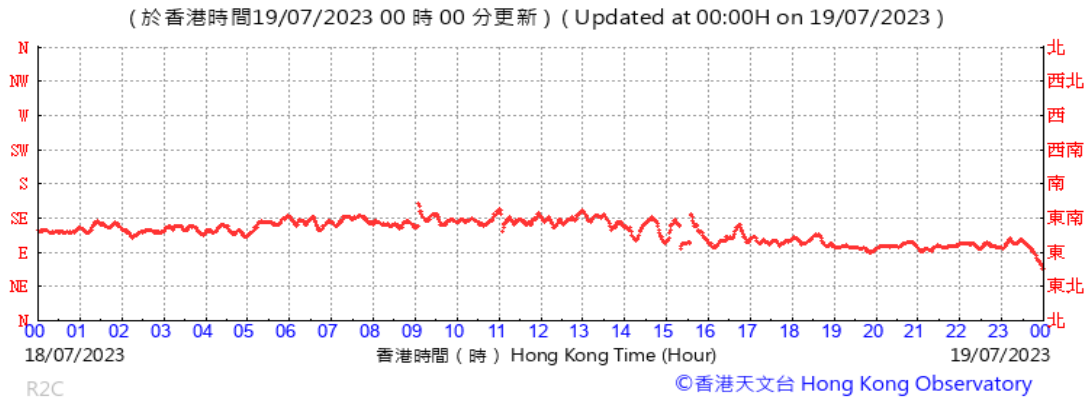


Wind Speed:

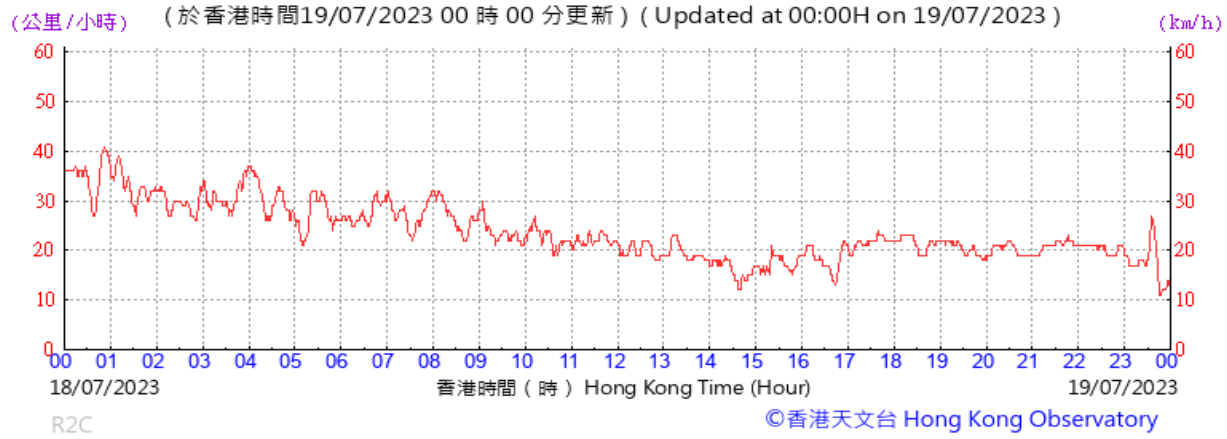


Appendix G – Extract of Meteorological Observations for Chek Lap Kok Automatic Weather Station
July 2023

Wind Direction:

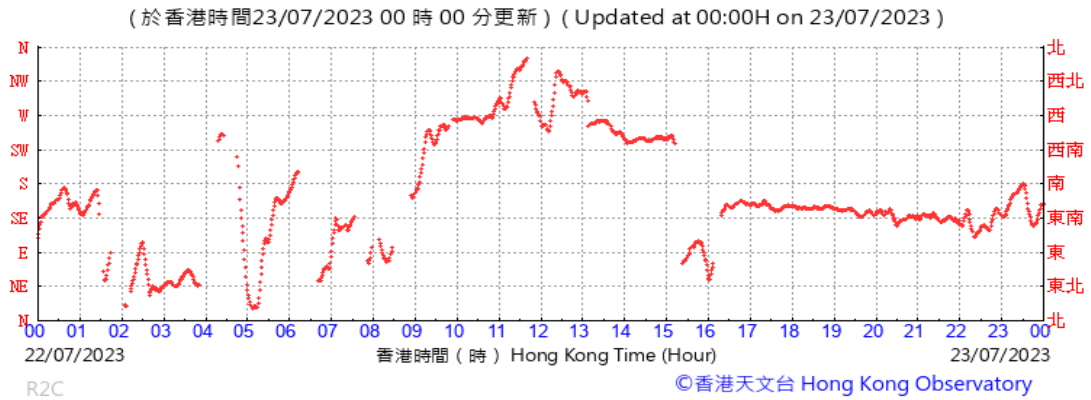


Wind Speed:

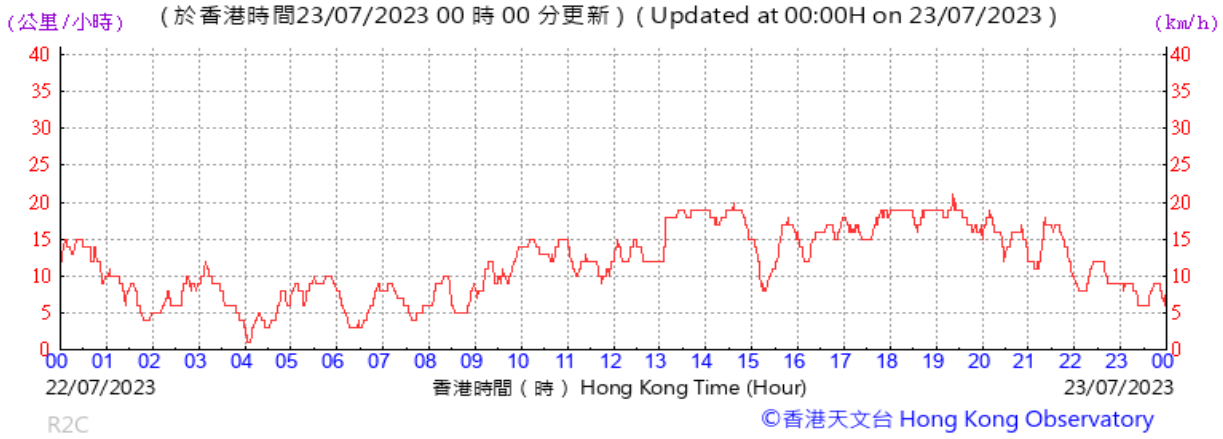


Appendix G – Extract of Meteorological Observations for Chek Lap Kok Automatic Weather Station
July 2023

Wind Direction:

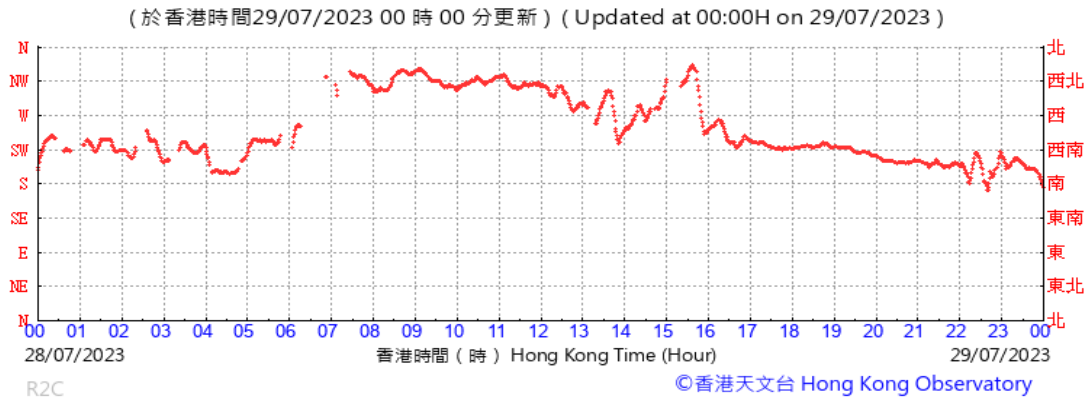


Wind Speed:

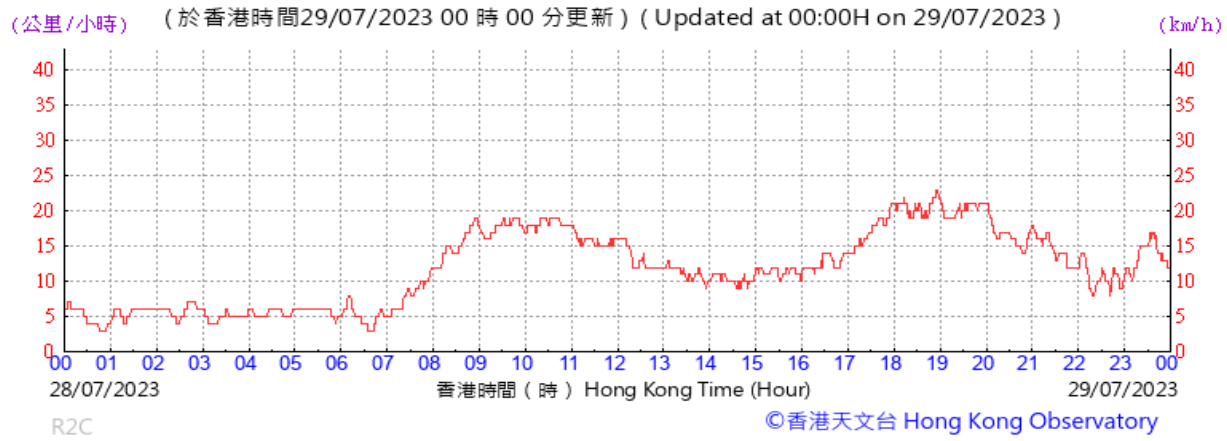


Appendix G – Extract of Meteorological Observations for Chek Lap Kok Automatic Weather Station
July 2023

Wind Direction:



Wind Speed:



APPENDIX H

Noise Monitoring Results and their Graphical Presentations

Appendix H Regular Construction Noise Monitoring Results

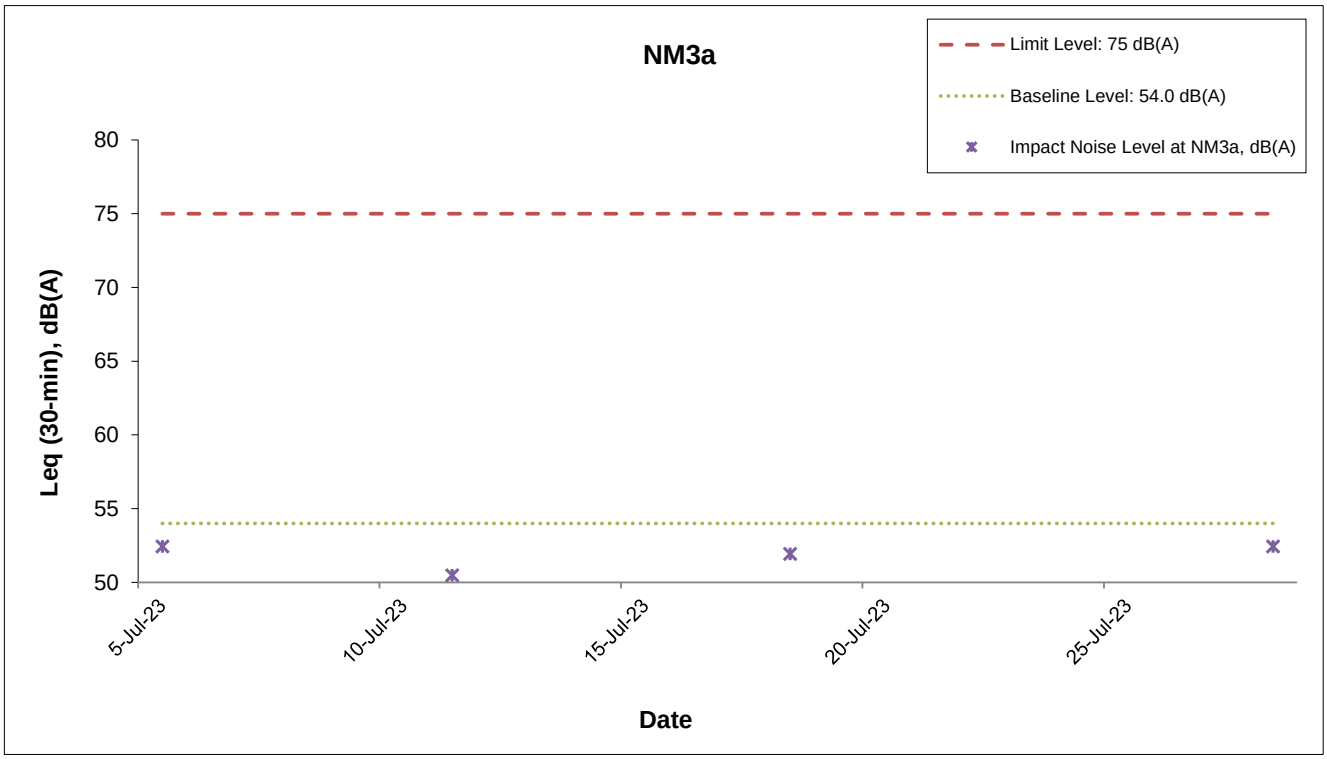
Daytime Noise Monitoring Results at Station NM3a (2/F rooftop of Yat Tung Shopping Centre)

Date	Weather Condition	Time	Impact Noise Level, dB(A)[+]	Limit Level, dB(A)	Exceedance (Y/N)
5-Jul-23	Sunny	13:30	52.4	75	N
11-Jul-23	Sunny	13:00	50.5	75	N
18-Jul-23	Cloudy	11:00	51.9	75	N
28-Jul-23	Fine	16:20	52.4	75	N

Note: Impact noise level has been corrected with baseline noise level.

[+] - Façade measurement

Appendix H Regular Construction Noise Monitoring Results



Tung Chug Line Extension - Contract 1201
Tung Chung West Station and Tunnels

Graphical Presentation of Impact Noise Monitoring Results

Date: August-2023

APPENDIX I

Event Action Plan

Appendix I

Event / Action Plan for Construction Dust Monitoring

EVENT	ACTION			
	ET	IEC	ER	Contractor
ACTION LEVEL				
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 theremedial measures required; 5. Increase monitoring frequency to daily.	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 to daily; 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.

ET – Environmental Team; IEC – Environmental Independent Checker; ER – Engineer

Event / Action Plan for Construction Dust Monitoring

EVENT	ACTION			
	ET	IEC	ER	Contractor
LIMIT LEVEL				
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 proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Review and agree on the remedial measures proposed by the Contractor; 3. Ensure remedial measures properly implemented; 4. Supervise implementation of remedial measures.	1. Identify source(s), investigate the causes of exceedance and propose remedial measures 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial actions to ER, ET and IEC within three working days of notification for agreement; 4. Implement the agreed proposals; 5. Amend proposal if appropriate.
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; 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.

ET – Environmental Team; IEC – Environmental Independent Checker; ER – Engineer

Event and Action Plan for Construction Noise Monitoring

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; 3. Notify Contractor; 4. Require Contractor to propose remedial measures for the analysed noise problem; 5. 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. Inform IEC, ER, EPD and Contractor; 2. Repeat measurements to confirm findings; 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.

ET – Environmental Team; IEC – Environmental Independent Checker; ER – Engineer

APPENDIX J

Cumulative Statistics of Exceedances, Complaints, Notification of Summons and Successful Prosecutions

Appendix J

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Subject	Status	Total no. received in this month	Total no. received since project commencement
Environmental complaints	-	-	-	0	1
Notification of summons	-	-	-	0	0
Successful Prosecutions	-	-	-	0	0

APPENDIX K

Summary of Notification of Exceedance

Appendix K

Summary of Notification of Exceedance

Environmental Parameter	No. of Exceedance This Month		Cumulative No. of Exceedance Project-to-Date	
Exceeded Level	**Action Level**	**Limit Level**	**Action Level**	**Limit Level**
Air Quality (Construction Dust - 1-hour TSP)	0	0	0	0
	0	0	0	0
Noise (Construction Noise - $L_{eq(30\ min),dB(A)}$)	0	0	1	0
Total	**0**	**0**	**1**	**0**

APPENDIX L

Waste Flow Table

MONTHLY SUMMARY WASTE FLOW TABLE

Contract 1201 - Tung Chung Line Extension Tung Chung West Station and Tunnels
Reporting Month: July 2023

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly					
	Total Quantity Generated	Stockpiled for Reuse or Recycle	Reused in the Project	Reused in other Projects	Disposed to Public Fill Banks	Imported Fill	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Other Waste	Disposed to Landfill (e.g. general refuse)
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000 kg)	(in '000kg)	(in '000kg)	(in '000L)	(in '000kg)	(in '000kg)
Yr 2023												
Jan												
Feb												
Mar												
Apr												
May												
Jun	0.08114	0	0	0	0.08114	0	0	0	0	0	0	284.6
Jul	0.583725	0	0	0	0.583725	0	0	0	0	0	32.46(1)	190.25
Aug												
Sep												
Oct												
Nov												
Dec												
total	0.664865	0	0	0	0.664865	0	0	0	0	0	32.46	474.85

(1) : Yard waste disposed into Y Park for recycling

aecom.com

Appendix B

Monthly EM&A Report
for
Contract 1202
Tung Chung East Station and Associated Enabling Works for Track Diversions

(July 2023)

MTR Corporation Limited

Tung Chung Line Extension

Contract 1202

Tung Chung East Station and

Associated Enabling Works for Track Diversions

Monthly EM&A Report

(for July 2023)

	Name	Post	Signature	Date
Prepared by	Johnny Kwong	Environmental Consultant		14/08/2023
Certified by	F. C. Tsang	Contractor's Environmental Team Leader		14/08/2023

TABLE OF CONTENTS

TABLES

FIGURES

LIST OF APPENDICES

EXECUTIVE SUMMARY

Tung Chung Line Extension Contract 1202 – Tung Chung East (TCE) Station and Tunnels (hereafter called "Contract 1202") covers part of the Tung Chung Line Extension (hereafter called "the Project") construction.

The at-grade TCE Station will be located approximately 2km east of the existing Tung Chung Station (TUC) at the south of the future Tung Chung New Town extension (TCNTE (East)) new reclamation area. The station is bounded by the future roads in the reclamation area and the existing Tung Chung Line (TCL) and Airport Express Line (AEL).

The Environmental Monitoring and Audit (EM&A) programme commenced on 1 July 2023. The impact monitoring for the Project includes air quality and noise monitoring.

This Monthly EM&A Report presents the EM&A works carried out during the reporting period from 1 July to 31 July 2023.

Breaches of Action and Limit Levels for Air Quality

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

Breaches of Action and Limit Levels for Construction Noise

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

Complaint, Notification of Summons and Successful Prosecution

No complaint or non-compliance was reported in the reporting period. No notification of summon or prosecution was received in this reporting period.

Reporting changes

There was no reporting change in the reporting month.

Future key issues

A summary of the construction activities provided by the Main Contractor in the next three reporting months are listed below:

Location	Site Activities
TCE	• Preparation and construction of site office • Site formation works • Ground treatment works • Drainage construction • Construction of footing for noise barrier & OHL Mast
Area 138	• Fencing erection • Drainage construction • Hard paving construction

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

1. INTRODUCTION

Paul Y. – CRCC (TUE 1202) Joint Venture (PCJV) was commissioned by the MTR Corporation (MTRC) as the Contractor for Works Contract 1202. Acuity Sustainability Consultant Limited (Acuity) was appointed by PCJV as the Contractor's Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme during construction phase of the Project.

1.1 Propose of the Report

1.1.1. This Monthly EM&A Report presents the EM&A works carried out during the reporting period from 1 July to 31 July 2023.

1.2 Report Structure

1.2.1. The monthly EM&A Report is organized as follows:

- Section 1: Introduction
- Section 2: Project Information
- Section 3: Environmental Monitoring Requirement
- Section 4: Implementation Status of Environmental Mitigation Measures
- Section 5: Monitoring Results
- Section 6: Environmental Site Inspection and Audit
- Section 7: Environmental Non- conformance
- Section 8: Future Key Issues
- Section 9 Conclusions and Recommendations

2. PROJECT INFORMATION

2.1 Background

2.1.1 Tung Chung Line Extension (TUE) was first initiated in the Railway Development Strategy 2014 (RDS- 2014) announced by the Government of the Hong Kong Special Administrative Region, which includes the conceptual scheme of Tung Chung West (TCW) Extension and a possible Tung Chung East (TCE) Station.

2.1.2 The Tung Chung Line Extension (TUE) Project is an approximately 1.3km extension of the existing Tung Chung Line (TCL) with two new stations namely TCE Station and TCW Station.

2.1.3 The Environmental Impact Assessment (EIA) Reports for TUE (Register No.: AEIAR-235/2022) was approved on 12 July 2022 under the Environmental Impact Assessment Ordinance (EIAO), Following the approval of the EIA Report, an Environmental Permit (EP) was granted on 9 August 2022 (EP No.: EP-614/2022), for the construction and operation.

2.1.4 According to the approved EM&A Manual of TUE, the EM&A monitoring for the Project includes air quality and noise monitoring. Baseline monitoring for TUE was carried out from Nov 2022 to Mar 2023.

2.2 General Description of the Project

2.2.1 The key elements of this Contract 1202 are comprise below:

- Construction of a new TCE Station between Sunny Bay Station and Tung Chung Station.
- Construction of two footbridges connecting TCE and Area 113 development.
- Cable containment and associated enabling works for track diversions.
- Construction of station associated building services and Architectural Builders Works and Finishes (ABWF).

2.2.2 The layout plan of the Project is shown in **Figure 2.1**.

2.3 Construction Programme and Activities

2.3.1 The major construction activities undertaken in the reporting month are summarised in **Table 2.1** below:

Table 2.1 Major Construction Activities in the Reporting Month

Location	Site Activities
TCE	• Site preparation • Site clearance • Preparation for site office setup
Area 138	• Site preparation

2.3.2 The tentative Construction programmes is presented in **Appendix A**.

2.4 Project Organization

2.4.1 The key personnel contact names and telephone numbers are presented in **Appendix B**. The key personal contact names and numbers for the Project are summarized in **Table 2.2**.

Table 2.2 Contact Information of Key Personnel

Party	Role	Position	Name	Telephone
MTRC	Project Environmental Team	Project Environmental Team leader	Mr. Edan Li	2688 1179
Meinhardt	Independent Environmental Checker (IEC)	Independent Environmental Checker (IEC)	Mr. Adi Lee	2859 5443
PCJV	Contractor	Environmental Manager	Mr. Albert Chan	9700 1083
Acuity	Contractor's Environmental Team (ET)	ET Leader	Mr. Tsang, Fan Cheong	2698 8060

2.5 Status of Environmental Licences, Notification and Permits

2.5.1 A summary of the valid permits, licences, and/ or notifications on environmental protection for this Project is presented in **Table 2.3**.

Table 2.3 Summary of the Status of Valid Environmental License Notification, Permit and Documentations

Permit/ Licences/ Notification/ Reference No.	Valid Period		Status	Remark
	From	To		
Environmental Permit				
EP-614/2022	9-Aug-2022	-	Valid	-
Construction Noise Permit				
GW-RS0582-23	17-Jul-2023	16-Jan-2024	Valid	-
GW-RS0578-23	1-Aug-2023	31-Jan-2024		
Wastewater Discharge License				
-	-	-	-	-
Chemical Waste Producer Registration				
5111-950-P3457-02	28-Jun-2023	-	Valid	-
Billing Account for Construction Waste Disposal				
7047632	6-Jun-2023	-	Valid	
Notification Under Air Pollution Control (Construction Dust)				
472845	31-May-2023	-	Valid	

3. ENVIRONMENTAL MONITORING REQUIREMENT

3.1 Construction Dust Monitoring

Monitoring Requirements

3.1.1 In accordance with the EM&A Manual, the ET shall carry out impact monitoring during construction phase of the project. For 1-hour Total Suspended Particulates (TSP) monitoring, the sampling frequency of at least three times every six days should be undertaken when the highest dust impact occurs. The Action and Limit level of the air quality monitoring is provided in **Appendix D**.

Monitoring Equipment

3.1.2 1-hour TSP air quality monitoring was preformed using High Volume Sampler (HVS) located at the designated monitoring station. The HVS meets all the requirements of the EM&A Manual. The equipment used for 1-hour TSP measurement during the reporting month are summarised in **Table 3.1**.

Table 3.1 Construction Dust Monitoring Equipment

Measuring Parameter	Monitoring Equipment	Brand and Model	Serial Number	Expiry Date
1-hour TSP	High Volume Sampler	TE-5170X	1086	7-12-2023
	Calibration Kit	TE-5028A	3702	31-3-2024

3.1.3 Initial calibration of HVS with mass flow controller was conducted upon installation and will be conducted every six months. Copies of calibration certificates of the HVS is presented in **Appendix E.**

Monitoring Locations

3.1.4 The monitoring station for construction dust monitoring pertinent to the Project has been identified based on the approved EM&A Manual for TUE of the Project. As public safety concerns were identified, the alternative impact monitoring location at DM-1b has been proposed and approved by EPD on 30 May 2023. The location of the construction dust monitoring station during the reporting period is summarised in **Table 3.2** and shown in **Figure 3.1**.

Table 3.2 Location of Construction Dust Monitoring Station

Monitoring Station ID	Monitoring Station
DM-1b	G/F of Ying Yuet House

Monitoring Methodology

3.1.5 The 1-hour TSP monitoring equipment, High Volume Sampler (Tisch TE-5170X High Volume Air Sampler), was deployed for the impact monitoring. The HVS was free-standing with no obstruction. The following criteria were considered in the installation of the HVS:

- A horizontal platform with appropriate support to secure the samples against gusty wind was provided;
- The distance between the sampler and an obstacle, such as buildings, at least twice the height that the obstacle protrudes above the HVS;
- A minimum of 2 meters separation from any supporting structure and measured horizontally;
- No furnace or incinerator flues was nearby;
- Airflow around the sampler was unrestricted;
- The sampler was located more than 20 meters from the dripline;
- Wire fence and gate did not cause any obstruction during monitoring;
- Permission was obtained to set up the samplers and gain access to the monitoring station; and
- A secured supply of electricity was obtained to operate the samplers.

3.1.6 Preparation of Filter Papers

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

3.1.7 Field Monitoring

- The power supply was checked to ensure that the HVS was working properly;
- The filter holder and area surrounding the filter were cleaned;
- The filter holder was removed by loosening the foul bolts, and a new filter, with stamped number upward, on a supporting screen was aligned carefully;
- The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter;
- The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied should be sufficient to avoid air leakage at the edges;
- The shelter lid was closed and secured with an aluminium strip;
- A new flow rate record sheet was inserted into the flow recorder;
- The flow rates of the HVS was checked and adjusted to between 0.6- 1.7 m^3/min, which was within the range specified in the EM&A Manual (i.e. 0.6- 1.7 m^3/min);
- The programmable timer was set for a sampling period of 1 hour, and the starting time, weather condition and filter number were recorded;

- The initial elapsed time was recorded;
- At the end of sampling, the sampled filter was removed carefully and folded in half so that only surfaces with collected particulate matter were in contact;
- The filter paper was placed in a clean plastic envelope and sealed; all monitoring information was recorded on a standard data sheet; and
- The filters were sent to Acumen Laboratory and Testing Ltd for analysis.

3.1.8 Maintenance and Calibration

- The HVS and its accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- HVS was calibrated using TE-5028A Calibration Kit upon installation.
- Calibration certificate of the TE-5028A Calibration Kit and the HVS is provided in **Appendix E**.

Monitoring Schedule for the Reporting Month

3.1.9 The schedule for environmental monitoring in July 2023 is provided in **Appendix F**.

3.2 Construction Noise Monitoring

Monitoring Requirements

3.2.1 In accordance with the approved EM&A Manual, impact noise monitoring should be conducted for at least once a week during the construction phase of the Project. **Table 3.3** summarises the monitoring parameters, frequency and duration of impact noise monitoring. The Action and Limit level of the construction noise monitoring is presented in **Appendix D**.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Parameter and Duration	Frequency
30-mins measurement at each monitoring station between 0700 and 1900 on normal weekdays. Leq, L_{10} and L_{90} would be recorded	At least once per week

Monitoring Equipment

3.2.2 Noise monitoring was performed using sound level meter at the designated monitoring station. The sound level meters deployed comply with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator was deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in **Table 3.4.**

Table 3.4 Noise Monitoring Equipment for Regular Noise Monitoring

Equipment	Model	Serial No.	Calibration Certificate Expiry Date
Sound Level Meter	NTi XL2	A2A-13548-E0	5 February 2024
	NTi XL2	A2A-13661-E0	21 August 2023
	NTi XL2	A2A-13663-F0	14 February 2024
	NTi XL2	A2A-17368-E0	3 April 2024
Acoustic Calibrator	Rion NC-75	35124528	1 November 2023
	Rion NC-75	35124529	1 November 2023
	Rion NC-75	35124530	1 November 2023

Monitoring Locations

3.2.3 The monitoring station for construction noise monitoring pertinent to the Project has been identified based on the approved EM&A Manual for TUE of the Project. The location of the construction noise monitoring station during the reporting period is summarised in **Table 3.5** and shown in **Figure 3.2**.

Table 3.5 Noise Monitoring Station during Construction Phase

Monitoring Station ID	Monitoring Station
NM1	Ying Tung Estate

Monitoring Methodology

3.2.4 Monitoring Procedure

a. Façade measurement was made at NM1.

b. The battery condition was checked to ensure the correct functioning of the meter.

c. Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:

   I. frequency weighting: A

   II. time weighting: Fast

   III. time measurement: $L_{eq(30\text{-}minutes)}$ during non-restricted hours i.e.. 0700-1900 on normal weekdays.

d. Prior to and after each noise measurement, the meter was calibrated using the acoustic (a) calibrator for 94 dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.

e. During the monitoring period, the L_{eq}, L_{10} and L_{90} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.

f. Noise measurement was paused during periods of high intrusive noise (e.g. dog barking. helicopter noise) if possible. Observations were recorded when intrusive noise was unavoidable.

g. Noise monitoring was cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind with gusts exceeding 10m/s.

Maintenance and Calibration

3.2.5 Maintenance and Calibration procedures are as follows:

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

b. The meter and calibrator were sent to the supplier or HOKLAS laboratory to check and calibrate at yearly intervals.

c. Relevant calibration certificates are provided in **Appendix E**.

Monitoring Schedule for the Reporting Month

3.2.6 The schedule for environmental monitoring in July 2023 is provided in **Appendix F**.

4. IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

4.1.1 The Contractor has implemented environmental mitigation measures and requirements as stated in the EIA Report, the EP and EM&A Manual. The implementation status of the environmental mitigation measures during the reporting period is summarized in **Appendix C**. Status of required submissions under the EP during the reporting period is summarised in **Table 4.1**.

Table 4.1 Status of Required Submission under Environmental Permit

EP condition	Submission	Submission Date
-	-	-

5. MONITORING RESULTS

5.1 Construction Dust Monitoring

5.1.1 The results for 1-hour TSP are summarized in **Table 5.1**. Detailed air quality monitoring results and wind monitoring data extracted from the Chek Lap Kok Automatic Weather Station operated by Hong Kong Observatory are presented in **Appendix G**.

Table 5.1 Summary of 1-hour TSP Monitoring Results

Monitoring Location	Average ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
DM-1b	73	22-177	327	500

5.1.2 No Action and Limit Level exceedance was recorded for 1-hour TSP monitoring in the reporting month.

5.1.3 The Event and Action Plan is annexed in **Appendix I**.

5.1.4 Major dust sources during the monitoring included construction dust and other nearby construction sites.

5.2 Regular Construction Noise Monitoring

5.2.1 The monitoring results for construction noise monitoring are summarized in **Table 5.2** and the monitoring data is provided in **Appendix H**.

Table 5.2 Summary of Construction Noise Monitoring Results

Monitoring Station ID	Range, dB(A), $L_{eq(30mins)}$	Limit Level, dB(A), $L_{eq(30mins)}$
NM1*	Below baseline level – 58.6	75

Remark: * Baseline correction will be made to the measured when the measured noise level exceeded the corresponding baseline noise level and presented in the table.

5.2.2 No Action Level and Limit Level exceedance was recorded in the reporting month.

5.2.3 The Event and Action Plan is annexed in **Appendix I**.

5.2.4 Major noise sources during the monitoring included construction noise from the Project site, and other nearby construction sites.

5.3 Waste Management

5.3.1 C&D materials and wastes sorting were carried out on site. Receptacles were available for C&D wastes and general refuse collection,

5.3.2 As advised by the Contractor, no inert C&D material was generated and disposed of as public fill in the reporting month. No inert C&D materials were reused in other projects or in the Contract in the reporting month. No fill material was imported in the reporting month, 67.33

tonnes general refuse was generated in the reporting month. No paper/ cardboard packaging material and plastic was collected by recycle contractor in the reporting month. No chemical waste or metal was collected by licensed contractor in the reporting month. The waste flow table is annexed in **Appendix L**.

5.3.3 The Contractor is advised to properly maintain on site C&D materials and wastes collection sorting and recording system and maximize reuse/ recycle of C&D materials and wastes. The Contractor is reminded to properly maintain the site tidiness and dispose of the wastes accumulated on site regularly and property.

5.3.4 The Contractor is reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

5.3.5 All dump trucks for C&D materials transportation and disposal had equipped with Global Positioning System (GPS) for real-time tracking and monitoring of their travel routings and parking locations. According to the record of travel routings and parking locations of all dump trucks provided by the Contractor, no track deviation or abnormal parking location was observed during the reporting period.

5.4 Landscape and Visual

5.4.1 Bi-weekly inspection of the implementation of landscape and visual mitigation measures was conducted on 4 and 18 July 2023. A summary of the site inspection is provided on **Appendix C**. The observations and recommendations made during the site inspections are presented in **Table 6.1**.

6. ENVIRONMENTAL SITE INSPECTION AND AUDIT

6.1.1 Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. A summary of the mitigation measures implementation schedule is provided in **Appendix C**.

6.1.2 In the reporting month, 4 site inspections were carried out on 4, 11, 18 and 25 July 2023. Joint inspections with the IEC, ER, the Contractor and the ET were conducted on 18 July 2023. No non-compliance was recorded during the site inspection. Details of observations recorded during the site inspections are presented in **Table 6.1**.

Table 6.1 Observations and Reminder of Site Audit

Parameters	Date	Observation/ Reminder	Follow-up Status
Air Quality	4 July 2023	Observations The Contractor shall erect a dust screen facing towards Tung Chung Line for dust control during rock breaking works.	Observations The dust screen was erected toward Tung Chung Line on 5 July 2023.
	18 July 2023	Reminder A proper NRMM label shall be displayed on the genset at container office area, the genset at PM office and the excavator at PM office.	Reminder The proper NRMM label was displayed on the breaker on 19 July 2023.
	25 July 2023	Observations The Contractor shall display a proper NRMM label on the breaker at W3.	Observations The proper NRMM label was displayed on the breaker on 25 July 2023.
Noise	4 July 2023	Observations The Contractor shall erect a noise barrier for noise mitigation during rock breaking works.	Observations The noise barrier was erected on 5 July 2023.
	11 July 2023	Reminder The Contractor shall erect a noise barrier for noise mitigation at Gate 3.	Reminder The noise barrier was elected on 13 July 2023.
	18 July 2023	Reminder • The breaker part shall be fully wrapped by noise barrier for noise mitigation during rock breaking works. • The Contractor shall erect noise barrier for noise mitigation during rock breaking.	Reminder • The breaker was fully wrapped by noise barrier on 18 July 2023. • The noise barrier was erected on 18 July 2023.

Parameters	Date	Observation/ Reminder	Follow-up Status
Water Quality	Nil	Nil	Nil
Waste/chemical management	18 July 2023	Observations • The contractor shall use a drip tray for chemicals to prevent chemical leakage. Reminder • The Contractor shall remove the stagnant water at the drip tray around Gate 3.	Observations • The chemical was placed on drip tray 18 July 2023. Reminder • The water in trip dray was removed 18 July 2023
Landscape & Visual	Nil	Nil	Nil
Permits/licenses	18 July 2023	Reminder The Contractor shall display the EP at the entrance of PM office.	Reminder The EP was displayed on 19 July 2023.

6.1.3 All follow-up actions requested by Contractor's ET and IEC during the site inspection were undertaken as reported by the Contractor and confirmed in the following weekly site inspection conducted during the reporting period.

7. ENVIRONMENTAL NON-CONFORMANCE

7.1 Summary of Monitoring Exceedances

7.1.1 No Action and Limit Level exceedance was recorded for 1-hour TSP monitoring in the reporting month.

7.1.2 No Action or Limit Level exceedance for construction noise monitoring was recorded at the monitoring station in the reporting month.

7.1.3 Summary of Notification of Exceedance is provided in **Appendix K**.

7.2 Summary of Environmental Non-Compliance

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

7.3 Summary of Environmental Complaints

7.3.1 No environmental complaint was received in the reporting month. Cumulative statistics on environmental complaints is provided in **Appendix J**.

7.4 Summary of Environmental Summon and Successful Prosecutions

7.4.1 No environmental related prosecution or notification of summons was received in the reporting month. Cumulative statistics on notification of summons and successful prosecutions is provided in **Appendix J**.

8. FUTURE KEY ISSUES

8.1 Construction Programme for the Next Three Month

8.1.1 The major construction works between August 2023 to October 2023 will be:

Table 8.1 Major Construction for the Next Three Month

Location	Site Activities
TCE	• Preparation and construction of site office • Site formation works • Ground treatment works • Drainage construction • Construction of footing for noise barrier & OHL Mast
Area 138	• Fencing erection • Drainage construction • Hard paving construction

8.2 Key Issues for the Coming Month

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

8.3 Monitoring Schedule for the Next Three Month

8.3.1 The tentative construction programme for the Project for the next reporting month is presented in **Appendix A**.

9. CONCLUSION AND RECOMMENDATIONS

9.1 Conclusions

9.1.1 1-hour TSP and noise monitoring were carried out in the reporting month.

9.1.2 No Action and Limit Level exceedance was recorded for 1-hour TSP monitoring in the reporting month.

9.1.3 No Action and Limit Level exceedance for noise was recorded at all monitoring stations in the reporting month.

9.1.4 4 nos. of environmental site inspections were carried out in July 2023. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site audit.

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

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

9.2 Comments and Recommendation

9.2.1 According to the environmental site inspections performed in the reporting month, the following recommendations were provided:

Air Quality Impact

- Display proper NRMM Label.
- Provide proper mitigation measure to prevent dusty material spread out from the site boundary.

Construction Noise Impact

- Provide proper mitigation measure to reduce construction noise impact.

Water Quality Impact

- No specific observation was identified in the reporting month.

Chemical and Waste Management

- Provide drip tray for chemicals to prevent chemical leakage.

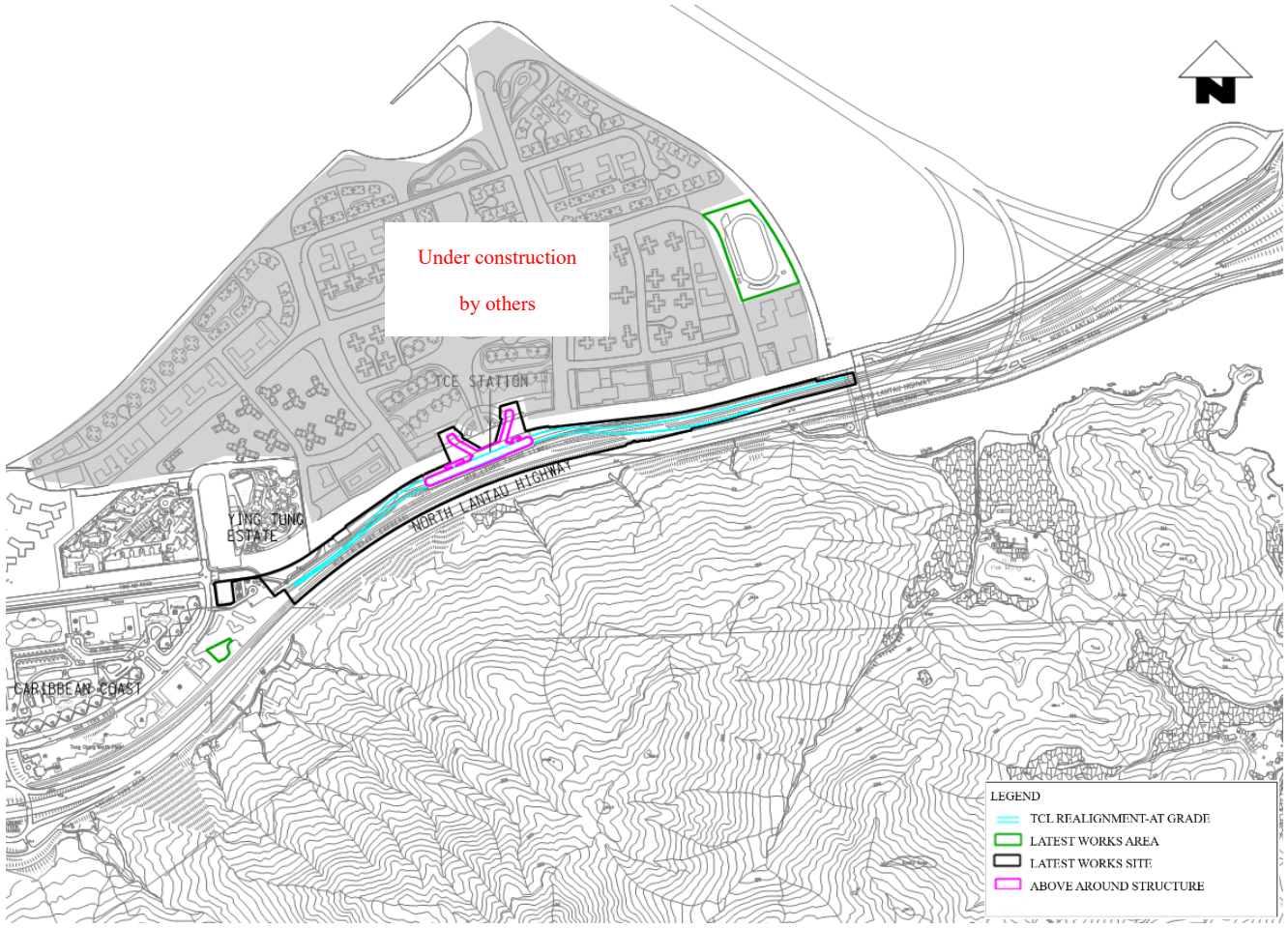
Landscape & Visual Impact

- No specific observation was identified in the reporting month.

Permits/licenses

- No specific observation was identified in the reporting month.

Figures



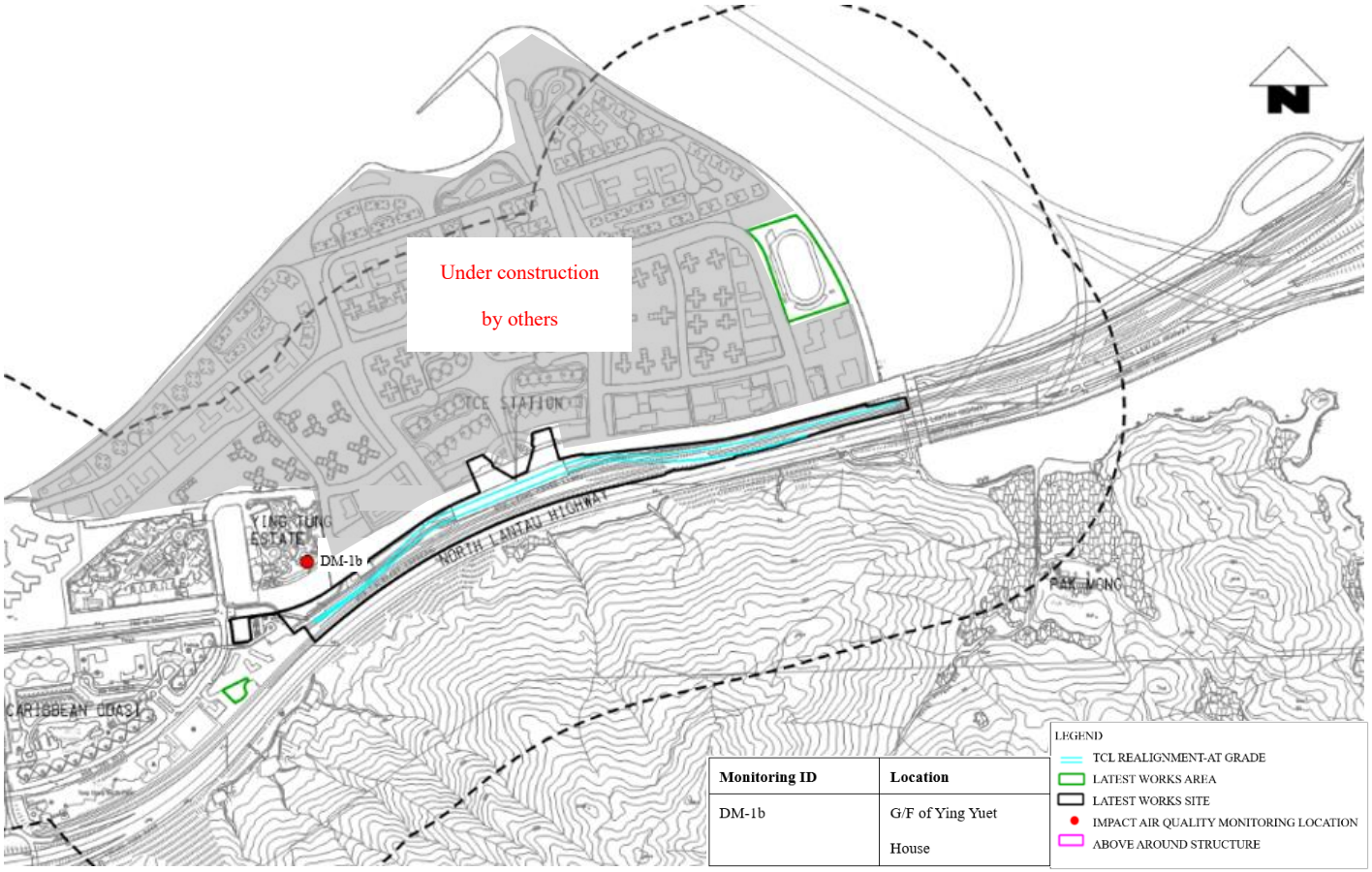
Project Title

Tung Chung Line Extension Contract 1202
Tung Chung East Station and
Associated Enabling Works for Track Diversions

Drawing Title

Site Layout Plan for Contract 1202

Figure 2.1



Monitoring ID	Location
DM-1b	G/F of Ying Yuet House

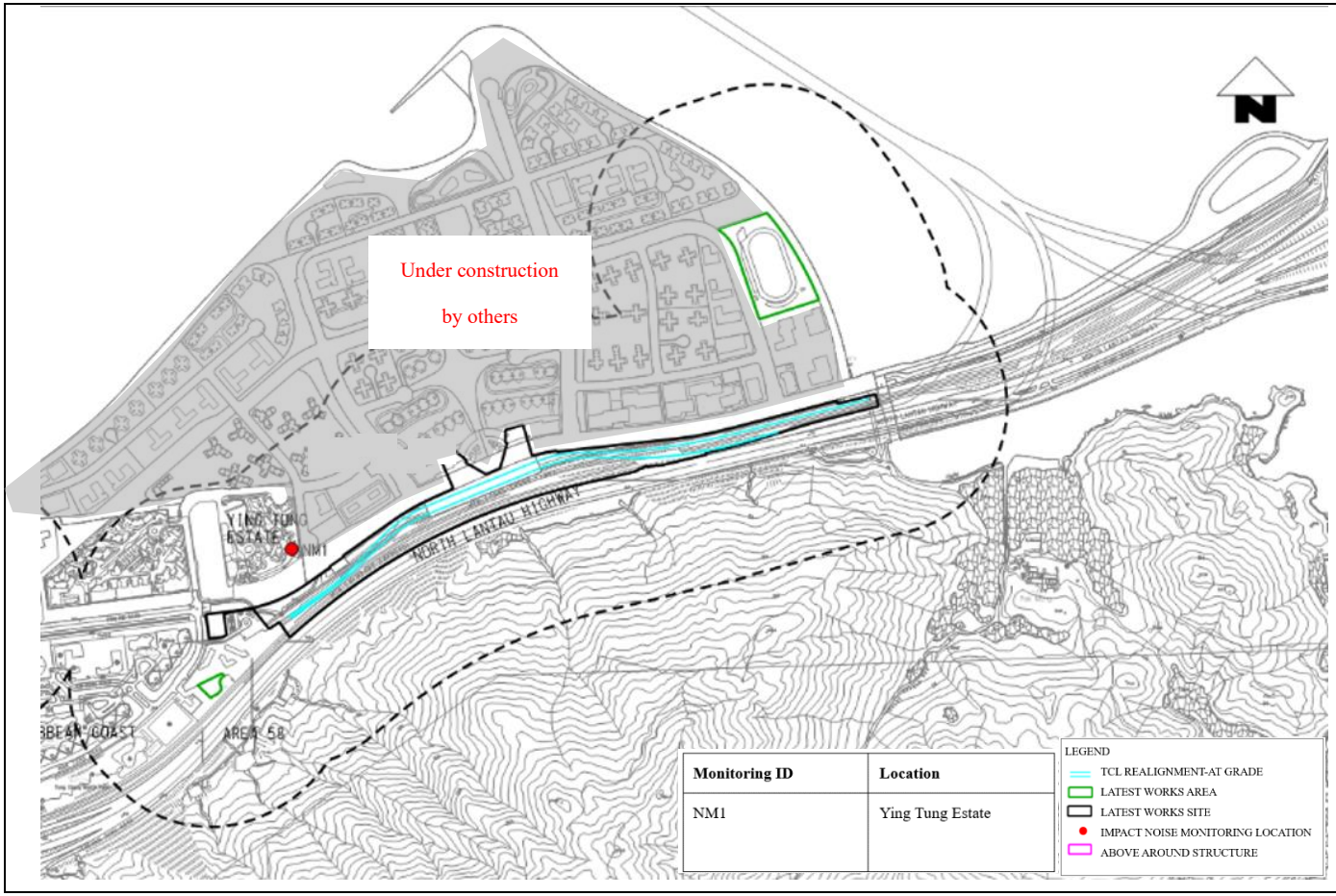
Project Title

Tung Chung Line Extension Contract 1202
Tung Chung East Station and
Associated Enabling Works for Track Diversions

Drawing Title

Location of Air Quality Monitoring Station

Figure 3.1



Project Title

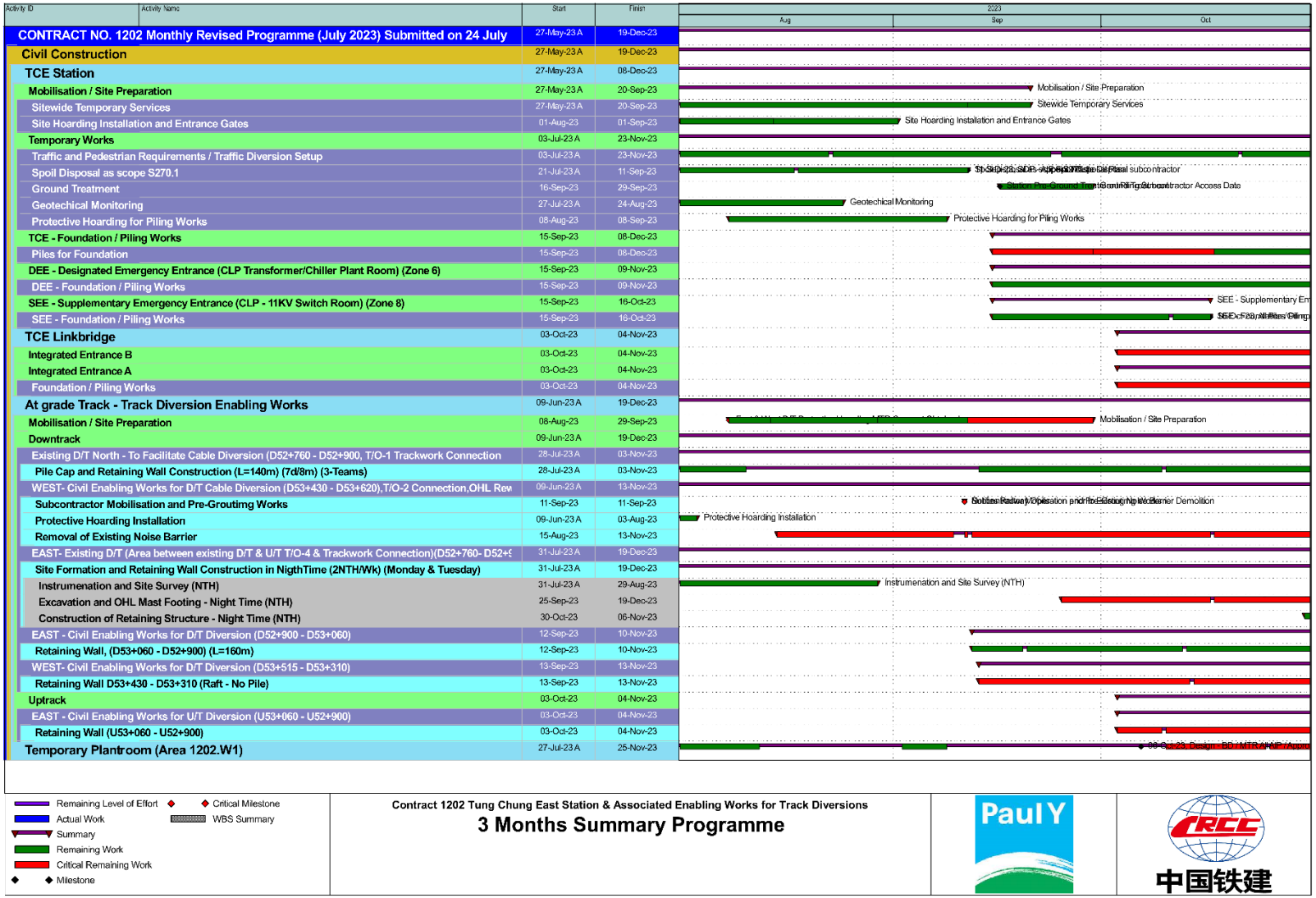
Tung Chung Line Extension Contract 1202
Tung Chung East Station and
Associated Enabling Works for Track Diversions

Drawing Title

Location of Airborne Noise Monitoring Station

Figure 3.2

Appendix A
Tentative Construction Programme


Activity ID
Activity Name
Start
Finish
2023
Aug
Sep
Oct
CONTRACT NO. 1202 Monthly Revised Programme (July 2023) Submitted on 24 July 27-May-23 A 19-Dec-23
Civil Construction 27-May-23 A 19-Dec-23
TCE Station 27-May-23 A 08-Dec-23
Mobilisation / Site Preparation 27-May-23 A 20-Sep-23
Sitewide Temporary Services 27-May-23 A 20-Sep-23
Site Hoarding Installation and Entrance Gates 01-Aug-23 01-Sep-23
Temporary Works 03-Jul-23 A 23-Nov-23
Traffic and Pedestrian Requirements / Traffic Diversion Setup 03-Jul-23 A 23-Nov-23
Spoil Disposal as scope S270.1 21-Jul-23 A 11-Sep-23
Ground Treatment 16-Sep-23 29-Sep-23
Geotechical Monitoring 27-Jul-23 A 24-Aug-23
Protective Hoarding for Piling Works 08-Aug-23 08-Sep-23
TCE - Foundation / Piling Works 15-Sep-23 08-Dec-23
Piles for Foundation 15-Sep-23 08-Dec-23
DEE - Designated Emergency Entrance (CLP Transformer/Chiller Plant Room) (Zone 6) 15-Sep-23 09-Nov-23
DEE - Foundation / Piling Works 15-Sep-23 09-Nov-23
SEE - Supplementary Emergency Entrance (CLP - 11KV Switch Room) (Zone 8) 15-Sep-23 16-Oct-23
SEE - Foundation / Piling Works 15-Sep-23 16-Oct-23
TCE Linkbridge 03-Oct-23 04-Nov-23
Integrated Entrance B 03-Oct-23 04-Nov-23
Integrated Entrance A 03-Oct-23 04-Nov-23
Foundation / Piling Works 03-Oct-23 04-Nov-23
At grade Track - Track Diversion Enabling Works 09-Jun-23 A 19-Dec-23
Mobilisation / Site Preparation 08-Aug-23 29-Sep-23
Downtrack 09-Jun-23 A 19-Dec-23
Existing D/T North - To Facilitate Cable Diversion (D52+760 - D52+900, T/O-1 Trackwork Connection 28-Jul-23 A 03-Nov-23
Pile Cap and Retaining Wall Construction (L=140m) (7d/8m) (3-Teams) 28-Jul-23 A 03-Nov-23
WEST- Civil Enabling Works for D/T Cable Diversion (D53+430 - D53+620),T/O-2 Connection,OHL Rev 09-Jun-23 A 13-Nov-23
Subcontractor Mobilisation and Pre-Grouting Works 11-Sep-23 11-Sep-23
Protective Hoarding Installation 09-Jun-23 A 03-Aug-23
Removal of Existing Noise Barrier 15-Aug-23 13-Nov-23
EAST- Existing D/T (Area between existing D/T & U/T T/O-4 & Trackwork Connection)(D52+760- D52+9 31-Jul-23 A 19-Dec-23
Site Formation and Retaining Wall Construction in NigthTime (2NTH/Wk) (Monday & Tuesday) 31-Jul-23 A 19-Dec-23
Instrumenation and Site Survey (NTH) 31-Jul-23 A 29-Aug-23
Excavation and OHL Mast Footing - Night Time (NTH) 25-Sep-23 19-Dec-23
Construction of Retaining Structure - Night Time (NTH) 30-Oct-23 06-Nov-23
EAST - Civil Enabling Works for D/T Diversion (D52+900 - D53+060) 12-Sep-23 10-Nov-23
Retaining Wall, (D53+060 - D52+900) (L=160m) 12-Sep-23 10-Nov-23
WEST- Civil Enabling Works for D/T Diversion (D53+515 - D53+310) 13-Sep-23 13-Nov-23
Retaining Wall D53+430 - D53+310 (Raft - No Pile) 13-Sep-23 13-Nov-23
Uptrack 03-Oct-23 04-Nov-23
EAST - Civil Enabling Works for U/T Diversion (U53+060 - U52+900) 03-Oct-23 04-Nov-23
Retaining Wall (U53+060 - U52+900) 03-Oct-23 04-Nov-23
Temporary Plantroom (Area 1202.W1) 27-Jul-23 A 25-Nov-23
Mobilisation / Site Preparation
Sitewide Temporary Services
Site Hoarding Installation and Entrance Gates
Geotechical Monitoring
Protective Hoarding for Piling Works
SEE - Supplementary En
Mobilisation / Site Preparation
Protective Hoarding Installation
Instrumenation and Site Survey (NTH)
Remaining Level of Effort
Actual Work
Summary
Remaining Work
Critical Remaining Work
Milestone
Critical Milestone
WBS Summary
Contract 1202 Tung Chung East Station & Associated Enabling Works for Track Diversions
3 Months Summary Programme
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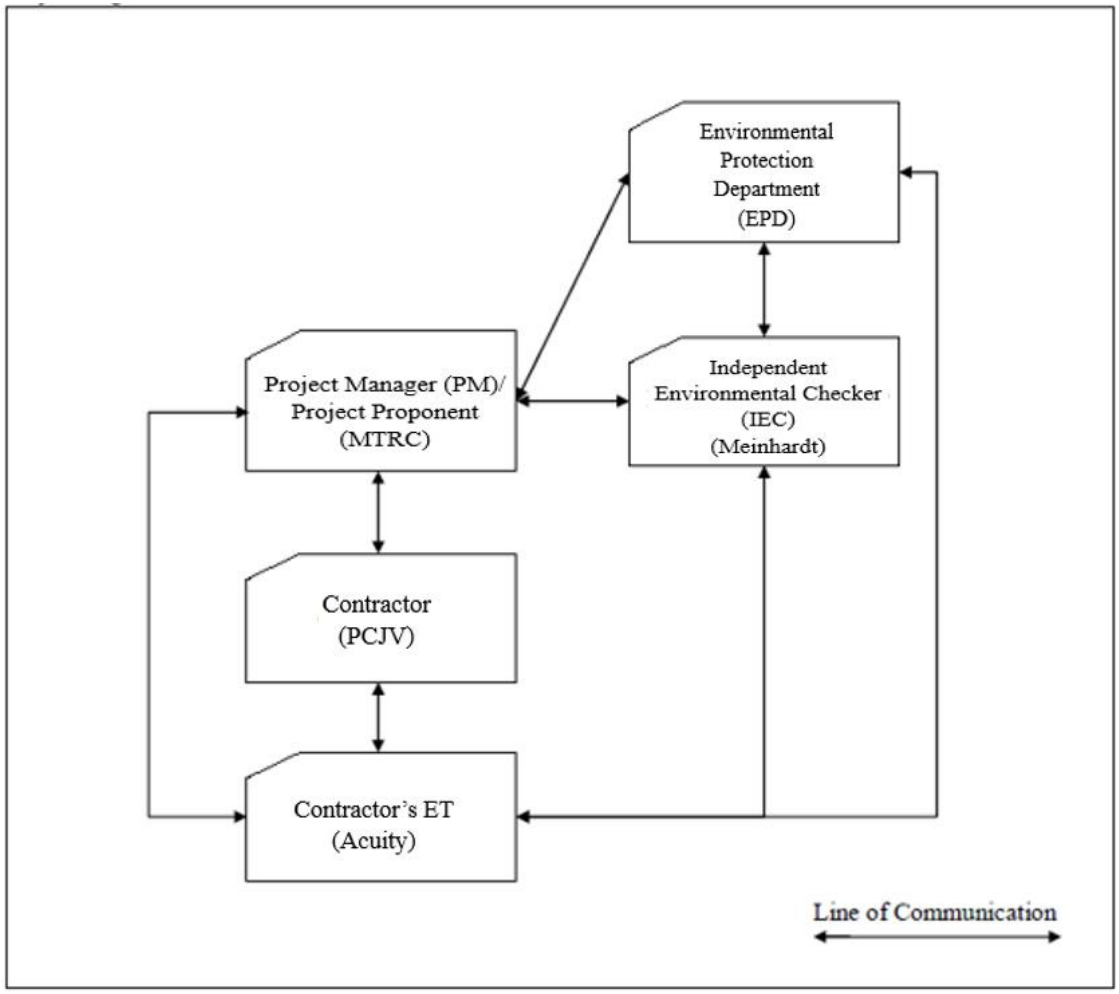
Appendix B
Project Organization Structure

Project O-Chart



Appendix C
Implementation Schedule of Environmental Mitigation Measures

Appendix C

Implementation Schedule of Environmental Mitigation Measures

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							
D1	The following dust suppression measures/practices should be incorporated: • Regular watering once per hour on all exposed construction areas with dust emission and haul road will be implemented; • Vehicle washing facilities should be provided at every designated exit point of the construction worksites; • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable for the excavation or unloading;	Minimise dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction phase	• APCO • To control the dust impact to meet HKAQO and EIAO-TM	Implemented

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
	• Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones; • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;						

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
	• When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period; • The portion of any road leading only to the construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; • Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust						

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
	suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; • Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides; • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an						

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
	audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and						

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
	• Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabilisers within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.						
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	Implemented

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 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; and • Erect screen to shield the emission source from sensitive receivers where necessary and practicable					combustion emission from PMEs	

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
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	Implemented
Construction Noise							
N1	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 be throttled down to a minimum;	Control construction airborne noise	Contractor	All construction sites	Construction phase	• Annex 5, EIAO-TM	Implemented

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
	• plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; • silencers or mufflers which available on construction equipment should be properly fitted and maintained during the construction works; • spoil transportation routes should be directed away from NSRs as far as practicable; • mobile plant should be sited as far away from NSRs as possible and practicable; • material stockpiles, site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities; • noise monitoring at selected NSRs should be conducted as far as practicable; and						

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
	• provide designated unloading areas at barging point away from the NSR as far as possible						
N2	Use of quiet plant which 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	Implemented
N3	Install movable temporary noise barriers (typical design is wooden framed barrier with a small-cantilevered upper portion of superficial density no less than 7kg/m^2 on a skid footing with 25mm thick internal sound absorptive lining), and full enclosure, screen the noisy plants including water pump etc.	Minimize the construction noise levels through screening	Contractor	All construction sites	Construction phase	• Annex 5, EIAO-TM	Implemented

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
N6	Implement an airborne construction noise monitoring under EM&A programme.	Monitor the airborne construction noise levels at the selected representative locations	Contractor	Selected noise monitoring stations	Construction phase	• Annex 5, EIAO-TM	Implemented
Water Quality (Construction Phase)							
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: • All effluent discharged from the construction site should comply with the standards stipulated in the DSS-TM;	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 • DSD Technical Circular No. 1/2017	Implemented

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
	Discharge surface and road runoff from construction sites including barging point into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps, and sedimentation tanks with sufficient retention time. Provide channels or earth bunds or sandbag barriers on-site during construction works to properly direct stormwater to such silt removal facilities. Provide perimeter channels on-site boundaries where necessary to intercept storm runoff from outside the site so that it will not wash across the site. Install catch pits and perimeter channels in advance of site formation works and earthworks;						

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
	• Covered the temporarily exposed slope surfaces e.g. by a tarpaulin. Protect the temporary access roads by crushed stone or gravel, as excavation proceeds as far as practicable. Install intercepting channels (e.g. along the crest/edge of excavation) to prevent storm runoff from washing across exposed soil surfaces. Carried out adequate surface protection measures safely well before the arrival of a rainstorm; • Compact the final surfaces of earthworks properly and execute the subsequent permanent work or surface protection immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Install appropriate drainage like intercepting channels where necessary;						

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
	• If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections as far as practicable to minimize the ingress of rainwater into trenches. Discharge the rainwater pumped out from trenches or foundation excavations into storm drains via silt removal facilities; • Recondition and reuse the bentonite wherever practicable to minimise the disposal volume of used bentonite slurries. Provide temporary enclosed storage locations on-site for any unused bentonite that needs to be transported away after the related construction activities are completed. The process of handling and disposing of bentonite slurries should follow the requirements as stipulated in ProPECC PN 1/94;						

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
	• Cover the open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites with tarpaulin or similar fabric during rainstorms; • Cover and temporarily sealed manholes (including newly constructed ones) adequately so as to prevent silt, construction materials, or debris from getting into the drainage system, and to prevent storm runoff from getting into foul sewers. Avoid discharging surface runoff into foul sewers in order not to unduly overload the foul sewerage system; and • Clean the construction sites on a regular basis (e.g. remove the rubbish and litter from the construction sites).						

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
W6	<u>Sewage Effluent from Construction Workforce</u> • 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 registered 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	Implemented

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
W7	<u>Accidental Spillage</u> • 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.	To minimise water quality impact from accidental spillage of chemicals	Contractor	All construction sites	Construction phase	• WPCO • ProPECC (PN1/94) • EIAO-TM • DSS-TM • WDO	Implemented after observation

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
	Maintenance of vehicles and equipment involving activities with the potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges; • The service and maintenance as well as any chemical storage area would be avoided to position near the watercourse as a safe guard; • The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance shall be followed to deal with chemical wastes; • Suitable containers should be used to hold the chemical wastes to avoid leakage or						

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
	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; • Storage area should be selected at a safe location on-site and adequate space should be allocated to the storage area; • Sufficient ground investigation and soil testing should be carried out; • All charted drill holes should be checked by engineer to ensure proper seal up prior to the TBM passing; and • The Contractor should devise a contingency plan for any accidental spillage and heavy rainfall event.						

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
W9	The following mitigation measures for sewage and other wastewater will be implemented. • Standard oil/grit interceptors/chambers should be provided where necessary before discharge to public sewers; • A discharge licence for the discharge of commercial and industrial effluent shall be applied; • The bleed off water from the freshwater cooling chiller should be recycled for flushing use as far as practical, with any excess bleed off be discharged into the sewerage system; and • The practices outlined in ProPECC PN 5/93 for handling, treatment and disposal of effluent should be adopted.	To minimize the water quality impact from sewage and other wastewater	MTR Corporation	Whole alignment	Operational Phase	• WPCO • ProPECC PN 5/93 • DSS-TM	NA

EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation status
Waste Management (Construction Phase)							
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, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; • Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling;	Ensure proper waste management system throughout the construction	Contractor	All construction sites	Construction phase	• WDO • ETWB TCW No. 19/2005	Implemented

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
	• Provision of sufficient waste disposal points and regular collection for disposal; • Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; • Provision of wheel washing facilities at the site exit before the trucks leave the works areas; and • The Contractor should prepare a Waste Management Plan (WMP) as part of the Environmental Management Plan (EMP) in accordance with the ETWB TCW No. 19/2005. The WMP should be submitted to						

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 Engineer for approval. Mitigation measures proposed in the EIA Report and the EM&A Manual should be adopted.						
WM2	*Waste Reduction Measures* 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; • Proper storage and good site practices to minimize the potential for damage and contamination of construction materials; • Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste;	Reduce waste generation	Contractor	All construction sites	Construction phase	• WDO	Implemented

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
	• Sort out demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (i.e. soil, broken concrete, metal etc.); and • Provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.						

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
WM3	*Storage, Collection and Transportation of Waste* The following recommendation should be implemented to minimise the impacts from storage, collection and transportation of waste: • Non-inert C&D materials such as top soil should be handled and stored well to ensure secure containment of the materials; • Stockpiling area should be provided with covers and water spraying system to prevent materials from windblown or being washed away; and	Minimise 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	Implemented

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
	• 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; • Disposal of waste should be done at licensed waste disposal facilities; • All dump trucks engaged on site for delivery of inert C&D material from the site to PFRFs should be equipped with GPS or equivalent system for tracking and monitoring of their travel routings and parking locations by the Contractor. The data collected by GPS or equivalent system should be recorded properly for checking and analysis by ET and IEC;						

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
	• A Construction and Demolition Material Management Plan (C&DMMP) should be prepared in accordance with Section 4.1.3 "Construction and Demolition Materials" of the Project Administration Handbook for Civil Engineering Works and will be submitted together with the EIA Report to Public Fill Committee (PFC) for approval; • Carry out on-site sorting for C&D materials; • Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; and • Implement a trip-ticket system for each works contract in accordance with DEVB TCW No. 06/2010.						

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
WM4	<u>On-site Sorting of C&D Materials</u> • Storage areas should be provided in the site for temporary storage of inert C&D materials during construction phase. • 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 as far as practicable. • Non-inert portion of C&D materials should be reused whenever possible and be disposal of at landfills as a last resort. • The Contractor should devise a system to work for on-site sorting of C&D materials and promptly	Minimize impacts from C&D handling waste materials	Contractor	All construction sites	Construction phase	• WDO • ETWB TCW No. 19/2005 • Land (Miscellaneous Provisions) Ordinance	Implemented

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
	remove all sorted and processed material arising from the construction activities to minimize temporary stockpiling on-site. The system should include the identification of the source of generation, estimated quantity, arrangement for onsite sorting and/ or collection, temporary storage areas, and frequency of collection by recycling contractors or frequency of removal off-site.						

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
WM5	<u>Reuse of C&D Materials</u> • Reuse suitable inert C&D materials on-site as far as practicable; • 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	Implemented

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
WM6	<u>Specification of Inert C&D Materials to be Delivered Offsite</u> 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	Reduce waste generation	Contractor	All construction sites	Construction phase	• WDO • ETWB TCW No. 19/2005 • Land (Miscellaneous Provisions) Ordinance	Implemented

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
	• 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.						

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
WM7	Use of Standard Formwork and Planning of Construction Materials purchasing • Standard formwork should also be used as far as practicable to minimise the arising of non-inert C&D materials; • Use of more durable formwork (e.g. metal hoarding) or plastic facing should be encouraged in order to enhance the possibility of recycling; and • Purchasing of construction materials should be carefully planned in order to avoid over ordering and wastage.	Reduce waste generation	Contractor	All construction sites	Construction phase	• N.A.	Implemented

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
WM8	<u>Land-based Marine Sediment</u> • Excavated land-based marine sediment should be reused as far as possible within the Project Site before considering disposal. Marine disposal option for the land-based marine sediment should only be considered as the last resort upon exhaustion of reuse options. • All construction plant and equipment shall be designed and maintained to minimise the risk of sediments being released into the water column or deposited in the locations other than designated location. • All vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to minimise that undue	Handling excavated sediment	Contractor	All construction sites where applicable	Construction phase	• ETWB TCW No. 34/2002 • DASO	Implemented

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
	turbidity is not generated by turbulence from vessel movement or propeller wash. • Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action. • The Contractor shall monitor all vessels transporting the excavated sediment. The Contractor shall keep and produce logs and other records to demonstrate compliance and that journeys are consistent with designated locations and copies of such records shall be submitted to the Engineers. • The Contractor shall comply with the conditions in the dumping permit issued under the Dumping at Sea Ordinance (DASO).						

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 Contractor shall comply with the conditions in the dumping permit issued under the Dumping at Sea Ordinance (DASO). • All bottom dumping vessels (hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material. • The excavated sediment shall be placed into the disposal pit by bottom dumping. • Discharge shall be undertaken rapidly and the hoppers shall be closed immediately. Sediment adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site.						

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
WM9	If mixing of land-based marine sediment with cement is to be used for backfilling on-site, the following mitigation measures should be followed. • The loading, unloading, handling, transfer or storage of bulk cement should be carried out in an enclosed system as far as practicable; • Mixing process and other associated material handling activities should be properly scheduled to minimise potential noise impact and dust emission; and • The mixing facilities should be sited as far apart as practicable from the nearby NSRs and to be sited under covers to minimise dust nuisance to the nearby receivers.	Handling excavated sediment	Contractor	All construction sites where applicable	Construction phase	• ETWB TCW No. 34/2002 • DASO	Implemented

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
WM10	<u>Chemical Waste</u> • Reduce the generation quantities or select a chemical type of less impact on environment, health and safety as far as possible; and • If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producer. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste collector. Chemical wastes (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, or another licensed facility, in accordance	Control the chemical waste and ensure proper storage, handling and disposal	Contractor	All construction sites	Construction phase	• Waste Disposal (Chemical Waste) (General) Regulation • Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	Implemented

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
	with the Waste Disposal (Chemical Waste) (General) Regulation.						
WM11	*General Refuse* • General refuse should be stored in enclosed bins separately from construction and chemical wastes. • Recycling bins should also be placed to encourage recycling; • Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean; • A reputable waste collector should be employed to remove general refuse on a daily basis;	Minimise production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction phase	• WDO	Implemented

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 should be made with the recycling companies to collect the recycle waste as required; • The Contractor should implement an education programme for workers relating to avoiding, reducing, reusing and recycling general waste; and • Participation in a local collection scheme should be considered by the Contractor to facilitate waste reduction.						

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
Ecology (Construction Phase)							
E1	Avoidance of marine works	To avoid any impacts on the important marine/ intertidal ecological resources	Contractor	All construction sites	Construction phase	• EIA	NA
E2	Avoidance of Tung Chung River and its estuary, and Tai Ho Wan	To avoid any impacts on the ecological important area	Contractor	All construction sites near Tung Chung River and Tai Ho Wan	Construction phase	• EIA	Implemented
E3	Avoidance of works within intertidal zone of Tung Chung Bay	To avoid any impacts on the important intertidal ecological resources	Contractor	All construction sites near Tung Chung Bay	Construction phase	• EIA	NA

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
E4	Avoidance of country parks, SSSI, CA and CPA	To avoid any ecological impacts	Contractor	All construction sites	Construction phase	• EIA	NA
E5	Avoidance of mature woodland	To avoid impact on mature woodland	Contractor	All construction sites	Construction phase	• EIA	NA
E6	Avoidance of re-diversion of Wong Lung Hang Nullah	To avoid any direct impacts on the Wong Lung Hang Estuary area	Contractor	All construction sites	Construction phase	• EIA	NA
E7	A protection zone should be set up for one individual of *Aquilaria sinensis* and *Canthium Dicoccum* on the plantation slope along Shun Tung Road	To protect the individuals of flora species	Contractor	Construction sites at the EAP/ EEP	Construction phase	• EIA	NA

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
E8	<u>Minimisation of Human Disturbance during Construction</u> • Install site hoarding of appropriate height along site boundaries; • Construction activities and material storage should be strictly confined within the construction sites; and • For TCW section, dedicated access to the nearby ecologically sensitive areas outside of the construction sites, works areas, and works sites is not allowed due to the proximity to the Wong Lung Hang estuary and Tung Chung Bay.	To minimise disturbance due to human activities during construction to the nearby areas.	Contractor	All construction sites	Construction phase	• EIA	Implemented
Landscape and Visual (Construction Phase)							
CM1	<u>Tree Preservation</u> Existing trees to be retained within the Project Site shall be protected carefully during construction.	Protect and preserve tree	Contractor	All construction sites	Construction Phase	• EIAO-TM • DEVB TCW No. 4/2020	Implemented

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
CM2	Tree Transplanting Trees unavoidably affected by the Project works shall be transplanted where practical. Approximately 170 nos. of trees are proposed to be transplanted at Shun Tung Road and Yu Tung Road.	Transplant Trees where suitable for transplantation	Contractor/ MTR Corporation	All construction sites	Construction Phase	• EIAO-TM • DEVB TCW No. 4/2020	NA
CM3	Landscape Reinstatement All hard and soft landscape areas disturbed temporarily during construction shall be reinstated on like-to-like basis as far as possible, to the satisfaction of the relevant Government Departments.	Reinstate the landscape environment	Contractor	All construction sites	Construction Phase	• EIAO-TM	NA
CM4	Lighting Control All security floodlights for construction sites should be carefully controlled to minimize light pollution and nighttime glare to nearby users.	Minimise impact of nighttime lighting and glare	Contractor	All construction sites	Construction phase	Guidelines on Industry Best Practices for External Lighting Installations	NA

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
CM5	<u>Erection of Screen Hoarding</u> Construction site hoarding should be erected around the work sites and work areas to screen pedestrian level views into the construction area from visual sensitive receivers. Hoarding design shall be compatible with the surrounding context as far as practicable.	Screen undesirable views of the construction sites	Contractor	All construction sites	Construction phase		Implemented
CM6	<u>Optimization of Construction Areas</u> Control of construction areas shall be enforced, where possible, to ensure that the landscape and visual impacts arising from the construction activities are minimised. It includes optimising the extent of working areas and temporary works areas, management on storing and using the construction equipment and materials, and consideration of detailed schedules to shorten the construction period.	Minimise impacts from construction activities on adjacent landscape and visual sensitive receivers.	Contractor	All construction sites	Construction phase		Implemented

EM&A Log Ref	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concerns to address	Implementation Agent	Location / Timing	Implementation Phase	Requirements and / or standards to be achieved	Implementation status
EM&A Project							
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	Implemented
EM2	1) An Environmental Team needs to be employed as per the EM&A Manual. 2) 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	Implemented

Appendix D
Summary of Action and Limit Levels

Appendix D – Summary of Action and Limit Levels

Table 1 Action and Limit levels for 1-hour TSP

Monitoring Location ID	Location	Action Level (µg/m^3)	Limit Level (µg/m^3)
DM-1b	G/F of Ying Yuet House	327	500

Table 2 Action and Limit Levels for Construction Noise (0700-1900 hrs of normal weekdays)

Monitoring Location ID	Location	Action Level	Limit Level
NM1	Ying Tung Estate	When one documented complaint is received	75

Appendix E
Calibration Certificates of Equipment

Air Quality Monitoring Equipment

HIVOL SAMPLER CALIBRATION DATA SHEET (TSP)

Site Information

Location:	Tung Chung East	Site ID:	DM-1b	Date:	07-Jun-2023
Serial No:	1086	Model:	TE-5170X	Operator:	Andy Li

Ambient Condition

Actual Pressure during Calibration (P_a) (mm Hg):	757.4	Actual Temperature during Calibration (T_a) (deg K):	301.6

Calibration Orifice

Model:	TE-5028A	Slope (m_c):	1.68024
Serial No.:	3702	Intercept (b_c):	-0.04353
Calibration Due Date:	31-Mar-24	Corr. Coeff:	0.99994

Calibration Data

Plate or Test #	ΔH_2O (in)	Qa, X-Axis (m^3/min)	I, CFM (chart)	IC, Y-Axis (corrected)
1	1.60	0.773	38.0	37.71
2	2.80	1.014	47.0	46.64
3	3.60	1.146	52.0	51.60
4	4.40	1.265	55.0	54.58
5	5.60	1.423	60.0	59.54

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

m= 33.5144 b= 12.3310 Corr. Coeff= 0.9975

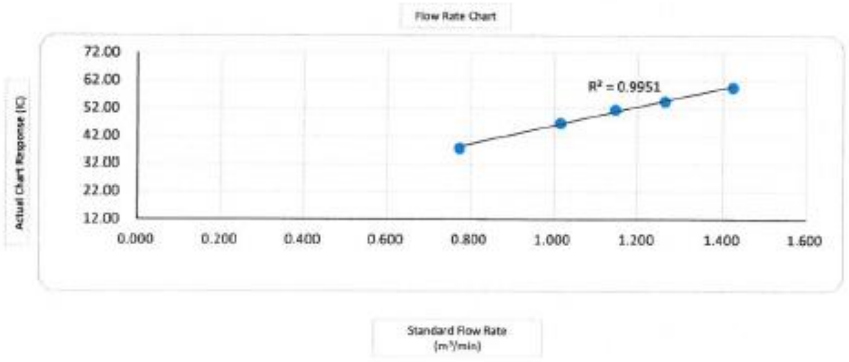
Calculations

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

$IC = I * (Sqrt (P_a/P_{std}) * (T_{std}/T_a))$

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

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



Checked by: F.C Tsang
Environmental Team Leader

Date: 07-Jun-2023

TISCH Environmental

RECALIBRATION DUE DATE:
March 31, 2024

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	March 31, 2023	**Rootsmeter S/N:** 438320	**Ta:** 294	°K
Operator:	Jim Tisch		**Pa:** 748.54	mm Hg
Calibration Model #:	TE-5028A	**Calibrator S/N:** **3702**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3110	4.1	1.50
2	3	4	1	1.0280	6.7	2.50
3	5	6	1	0.9340	8.1	3.00
4	7	8	1	0.8680	9.4	3.50
5	9	10	1	0.6580	16.2	6.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H(Ta/Pa)}$ (y-axis)
0.9929	0.7573	1.2237	0.9945	0.7586	0.7676
0.9894	0.9624	1.5798	0.9910	0.9641	0.9909
0.9875	1.0573	1.7306	0.9892	1.0591	1.0855
0.9858	1.1357	1.8693	0.9874	1.1376	1.1725
0.9767	1.4844	2.4474	0.9784	1.4869	1.5351
QSTD	**m=**	**1.68024**	**QA**	**m=**	**1.05214**
	b=	**-0.04353**		**b=**	**-0.02731**
	r=	**0.99994**		**r=**	**0.99994**

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

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

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

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

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002
www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

Noise Monitoring Equipment

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

Certificate of Calibration

for

Description:	*Sound Level Meter*
Manufacturer:	*NTi Audio*
Type No.:	*XL2 (Serial No.: A2A-13548-E0)*
Microphone:	*ACO 7052 (Serial No.:73912)*
Preamplifier:	*NTi Audio M2211 MA220 (Serial No.:5735)*

Submitted by:

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

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

☑ **Within (31.5Hz – 8kHz)**
☐ **Outside**

the allowable tolerance.

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

Date of receipt: 2 February 2023

Date of calibration: 6 February 2023

Date of NEXT calibration: 5 February 2024

Calibrated by: _____ *Calibration Technician*

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

Date of issue: **6 February 2023**

Certificate No.: APJ22-124-CC001

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

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

1. *Calibration Precaution:*

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

2. *Calibration Conditions:*

Air Temperature:	23.9 °C
Air Pressure:	1006 hPa
Relative Humidity:	47.9 %

3. *Calibration Equipment:*

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

4. *Calibration Results*

Sound Pressure Level

Reference Sound Pressure Level

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting		Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA	SPL	Fast	94	1000	94.1	±0.4

Linearity

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting		Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA	SPL	Fast	94	1000	94.1	Ref
				104		104.1	±0.3
				114		114.1	±0.3

Time Weighting

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting		Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA	SPL	Fast	94	1000	94.1	Ref
			Slow			94.1	±0.3

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Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dB SPL	Fast	94	31.5	94.1	±2.0
				63	94.2	±1.5
				125	94.1	±1.5
				250	94.1	±1.4
				500	94.2	±1.4
				1000	94.1	Ref
				2000	94.5	±1.6
				4000	95.2	±1.6
				8000	94.9	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA SPL	Fast	94	31.5	54.8	-39.4 ±2.0
				63	68.0	-26.2 ±1.5
				125	78.0	-16.1 ±1.5
				250	85.5	-8.6 ±1.4
				500	91.0	-3.2 ±1.4
				1000	94.1	Ref
				2000	95.7	+1.2 ±1.6
				4000	96.2	+1.0 ±1.6
				8000	93.9	-1.1+2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBC SPL	Fast	94	31.5	91.2	-3.0 ±2.0
				63	93.4	-0.8 ±1.5
				125	94.0	-0.2 ±1.5
				250	94.1	-0.0 ±1.4
				500	94.2	-0.0 ±1.4
				1000	94.1	Ref
				2000	94.3	-0.2 ±1.6
				4000	94.4	-0.8 ±1.6
				8000	92.0	−3.0 +2.1: −3.1

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

5. *Calibration Results Applied*

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

Uncertainties of Applied Value:

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

The uncertainties are evaluated for a 95% confidence level.

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

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

Certificate of Calibration

for

Description:	***Sound Level Meter***
Manufacturer:	***NTi Audio***
Type No.:	***XL2 (Serial No.: A2A-13661-E0)***
Microphone:	***ACO 7052 (Serial No.:68914)***
Preamplifier:	***NTi Audio MA220 (M2211) (Serial No.:6282)***

Submitted by:

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

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

☑ **Within (31.5Hz – 8kHz)**
☐ **Outside**

the allowable tolerance.

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

Date of receipt: 20 August 2022

Date of calibration: 22 August 2022

Date of NEXT calibration: 21 August 2023

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

Date of issue: 22 August 2022

Certificate No.: APJ22-071-CC001

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

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

1. *Calibration Precaution:*

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

2. *Calibration Conditions:*

Air Temperature:	23.4 °C
Air Pressure:	1005 hPa
Relative Humidity:	68.5 %

3. *Calibration Equipment:*

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

4. *Calibration Results*

Sound Pressure Level

Reference Sound Pressure Level

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA SPL	Fast	94	1000	93.8	±0.4

Linearity

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA SPL	Fast	94	1000	93.8	Ref
			104		103.8	±0.3
			114		114.0	±0.3

Time Weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA SPL	Fast	94	1000	93.8	Ref
		Slow			93.8	±0.3

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Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dB SPL	Fast	94	31.5	93.9	±2.0
				63	94.0	±1.5
				125	93.9	±1.5
				250	93.8	±1.4
				500	93.8	±1.4
				1000	93.8	Ref
				2000	93.4	±1.6
				4000	93.0	±1.6
				8000	92.2	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	31.5	54.6	-39.4 ±2.0
				63	67.7	-26.2 ±1.5
				125	77.8	-16.1 ±1.5
				250	85.2	-8.6 ±1.4
				500	90.6	-3.2 ±1.4
				1000	93.8	Ref
				2000	94.6	+1.2 ±1.6
				4000	94.0	+1.0 ±1.6
				8000	91.2	-1.1 +2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBC SPL	Fast	94	31.5	90.9	-3.0 ±2.0
				63	93.1	-0.8 ±1.5
				125	93.7	-0.2 ±1.5
				250	93.8	-0.0 ±1.4
				500	93.8	-0.0 ±1.4
				1000	93.8	Ref
				2000	93.3	-0.2 ±1.6
				4000	92.2	-0.8 ±1.6
				8000	89.3	-3.0 +2.1; -3.1

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5. *Calibration Results Applied*

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

Uncertainties of Applied Value:

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

The uncertainties are evaluated for a 95% confidence level.

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

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NTi AUDIO

Manufacturer Calibration Certificate

The following instrument has been tested and calibrated to the manufacturer specifications.
The calibration is traceable in accordance with ISO/IEC 17025 covering all instrument functions.

- Device Type: **XL2 Audio and Acoustic Analyzer**
- Serial Number: **A2A-13663-F0**

- Certificate Issued: **15 February 2023**
- Certificate Number: **44972-A2A-13663-F0**
- Results: **PASSED**
  (for detailed report see next page)

Tested by: M. Frick

Signature:

Stamp: NTi Audio AG
Im alten Riet 102
LI - 9494 Schaan
www.nti-audio.com

Calibration of: XL2 Audio and Acoustic Analyzer
Serial Number: A2A-13663-F0
Date: 15 February 2023

- Detailed Calibration Test Results:

		reference	actual	unit	actual error	XL2 tolerance	calibration uncertainty[2]
RMS Level @ 1kHz, XLR Input		0.1	**0.100**	V	≤0.1%	±0.5%	±0.10%
		1	**0.999**	V	-0.1%	±0.5%	±0.09%
		10	**9.982**	V	-0.2%	±0.5%	±0.09%
Flatness, XLR Input[1]	20 Hz	1	**0.995**	V	-0.5%	±1.1%	±0.09%
	20 kHz	1	**1.003**	V	0.3%	±1.1%	±0.09%
Frequency		1000	**1000.00**	Hz	≤0.003%	±0.003%	±0.01%
Residual Noise	XLR		**< 2 uV**			<2 uV	±0.50%
THD+N @ 0 dBu, 1 kHz, XLR Input			**-100.5**	dB		typ. -100 dB	±0.50%

- Test Conditions:

Temperature:	**24.9**	°C
Relative Humidity:	**19.8**	%

- Calibration Equipment Used:

- Agilent Multimeter, Typ 34401A, Serial No. MY 5300 4607
  Last calibration: 15.09.2022, Next calibration: 15.09.2023
  Calibrated by ELCAL to the national standards maintained
  at Swiss Federal Office of Metrology. SCS 0002

- FX100 Audio Analyzer, Serial No. 10408
  Last Calibration: 11.10.2022, Next Calibration: 11.10.2023
  Manufacturer calibration based on Agilent 34410, Serial No. MY47014254,
  Last Calibration: 26.05.2022, Next Calibration: 26.05.2023
  which is calibrated by ELCAL to national standards maintained
  at Swiss Federal Office of Metrology. SCS 002

[1] The specified tolerance +/-0.1 dB @ 1V = +/- 1.1%

[2] The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with the regulations of the GUM.

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

Certificate of Calibration

for

Description:	*Sound Level Meter*
Manufacturer:	*NTi Audio*
Type No.:	*XL2 (Serial No.: A2A-17638-E0)*
Microphone:	*ACO 7052 (Serial No.:84413)*
Preamplifier:	*NTi Audio M2211 MA220 (Serial No.:7014)*

Submitted by:

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

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

☑ **Within (31.5Hz – 8kHz)**
☐ **Outside**

the allowable tolerance.

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

Date of receipt: 30 March 2023

Date of calibration: 04 April 2023

Date of NEXT calibration: 03 April 2024

Calibrated by: _____ *Calibration Technician*

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

Date of issue: 04 April 2023

Certificate No.: APJ22-164-CC001

Room 422,Leader Industrial Centre,57-59 Au Pui Wan Street ,Fo Tan, Shatin,N.T.,Hong Kong
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(A+A)*L Acoustics and Air Testing Laboratory Co. Ltd. 聲學及空氣測試實驗室有限公司

1. *Calibration Precaution:*

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

2. *Calibration Conditions:*

Air Temperature:	21.6 °C
Air Pressure:	1005 hPa
Relative Humidity:	71.6 %

3. *Calibration Equipment:*

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

4. *Calibration Results*

Sound Pressure Level

Reference Sound Pressure Level

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting		Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA	SPL	Fast	94	1000	94.1	±0.4

Linearity

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting		Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA	SPL	Fast	94	1000	94.1	Ref
				104		104.1	±0.3
				114		114.1	±0.3

Time Weighting

Setting of Unit-under-test (UUT)				Applied value		UUT Reading, dB	IEC 61672 Class 1 Specification, dB
Range, dB	Freq. Weighting		Time Weighting	Level, dB	Frequency, Hz		
30-130	dBA	SPL	Fast	94	1000	94.1	Ref
			Slow			94.1	±0.3

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Frequency Response

Linear Response

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dB SPL	Fast	94	31.5	94.1	±2.0
				63	94.1	±1.5
				125	94.1	±1.5
				250	94.0	±1.4
				500	94.1	±1.4
				1000	94.1	Ref
				2000	94.3	±1.6
				4000	94.9	±1.6
				8000	93.9	+2.1; -3.1

A-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBA SPL	Fast	94	31.5	54.7	-39.4 ±2.0
				63	67.9	-26.2 ±1.5
				125	78.0	-16.1 ±1.5
				250	85.4	-8.6 ±1.4
				500	90.9	-3.2 ±1.4
				1000	94.1	Ref
				2000	95.5	+1.2 ±1.6
				4000	95.9	+1.0 ±1.6
				8000	92.8	-1.1+2.1; -3.1

C-weighting

Setting of Unit-under-test (UUT)			Applied value		UUT Reading,	IEC 61672 Class 1
Range, dB	Freq. Weighting	Time Weighting	Level, dB	Frequency, Hz	dB	Specification, dB
30-130	dBC SPL	Fast	94	31.5	91.0	-3.0 ±2.0
				63	93.3	-0.8 ±1.5
				125	93.9	-0.2 ±1.5
				250	94.1	-0.0 ±1.4
				500	94.2	-0.0 ±1.4
				1000	94.1	Ref
				2000	94.2	-0.2 ±1.6
				4000	94.1	-0.8 ±1.6
				8000	90.9	–3.0 +2.1; –3.1

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

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

5. *Calibration Results Applied*

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

Uncertainties of Applied Value:

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

The uncertainties are evaluated for a 95% confidence level.

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

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

Certificate No. D224645E

JCSS 0197

CALIBRATION CERTIFICATE

Product	:	SOUND CALIBRATOR
Type	:	NC-75
Serial number	:	35124528
Manufacturer	:	RION CO., LTD.
Calibration quantities	:	Sound pressure level (with reference standard microphone)
Calibration method	:	Measured by specified secondary standard microphone according to JCSS calibration procedure specified by RION.
Ambient conditions	:	Temperature 23.9 ℃, Relative humidity 49 %, Static pressure 100.6 kPa
Calibration date	:	02/11/2022 (DD/MM/YYYY)
Calibration location	:	3-20-41 Higashimotomachi, Kokubunji, Tokyo 185-8533, Japan RION CO., LTD. Calibration Room

We hereby certify that the results of this calibration were as follows.

Issue date : 09/11/2022 (DD/MM/YYYY)

Junichi Kawamura
Manager
Quality Assurance Section,
Quality Assurance Department,
Environmental Instrument Division,
RION CO., LTD.
3-20-41 Higashimotomachi, Kokubunji,
Tokyo 185-8533, Japan

This certificate is based on article 144 of the Measurement Law and indicates the result of calibration in accordance with measurement standards traceable to Primary Measurement Standards (National Standards) which realizes the physical units of measurement according to the International System of Units (SI).
The accreditation symbol is attestation of which the result of calibration is traceable to Primary Measurement Standards (National Standards).
The certificate shall not be reproduced except in full, without the written approval of the issuing laboratory.
The calibration laboratory who issued this calibration certificate conforms to ISO/IEC 17025:2017.
This calibration certificate was issued by the calibration laboratory accredited by IAJapan who is a signatory to the Mutual Recognition Arrangement (MRA) of International Laboratory Accreditation Cooperation (ILAC) and Asia Pacific Accreditation Cooperation (APAC). This (These) calibration result(s) may be accepted internationally through ILAC/APAC MRA.

RION

Certificate No. D224645E

CALIBRATION RESULT

1. Sound pressure level (with reference standard microphone)

Measured value	Expanded uncertainty *1
93.99 dB	0.09 dB

Specified secondary standard microphone:
Type : 4160
Serial number : 2973341
Reference Sound pressure : 2×10^{-5} Pa

*1 Defines an interval estimated to have a level of confidence of approximately 95 %.
Coverage factor k=2

Calibration result is the calibration value in ambient conditions during calibration.

BE OUT OF JCSS CALIBRATION

1. Frequency

Measured value	Measurement uncertainty (k=2)
1000.0 Hz	2.7×10^{-4} Hz

Working measurement standard universal counter:
Type : 53132A
Serial number : MY40005574
(JCSS Calibration Certificate No. 2208001889940)

2. Total distortion

Measured value
0.2 %

Working measurement standard distortion meter:
Type : VA-2230A
Serial number : 11076061
(A2LA Calibration Certificate No. 1502.03109)

- closing -

Certificate No. D224646E

JCSS 0197

CALIBRATION CERTIFICATE

Product	:	SOUND CALIBRATOR
Type	:	NC-75
Serial number	:	35124529
Manufacturer	:	RION CO., LTD.
Calibration quantities	:	Sound pressure level (with reference standard microphone)
Calibration method	:	Measured by specified secondary standard microphone according to JCSS calibration procedure specified by RION.
Ambient conditions	:	Temperature 23.9 ℃, Relative humidity 49 %, Static pressure 100.6 kPa
Calibration date	:	02/11/2022 (DD/MM/YYYY)
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We hereby certify that the results of this calibration were as follows.

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Junichi Kawamura
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Coverage factor k=2

Calibration result is the calibration value in ambient conditions during calibration.

BE OUT OF JCSS CALIBRATION

1. Frequency

Measured value	Measurement uncertainty (k=2)
1000.0 Hz	2.7×10^{-4} Hz

Working measurement standard universal counter:
Type : 53132A
Serial number : MY40005574
(JCSS Calibration Certificate No. 2208001889940)

2. Total distortion

Measured value
0.2 %

Working measurement standard distortion meter:
Type : VA-2230A
Serial number : 11076061
(A2LA Calibration Certificate No. 1502-03109)

- closing -

Certificate No. D224647E

JCSS 0197

CALIBRATION CERTIFICATE

Product	:	SOUND CALIBRATOR
Type	:	NC-75
Serial number	:	35124530
Manufacturer	:	RION CO., LTD.
Calibration quantities	:	Sound pressure level (with reference standard microphone)
Calibration method	:	Measured by specified secondary standard microphone according to JCSS calibration procedure specified by RION.
Ambient conditions	:	Temperature 23.9 ℃, Relative humidity 49 %, Static pressure 100.6 kPa
Calibration date	:	02/11/2022 (DD/MM/YYYY)
Calibration location	:	3-20-41 Higashimotomachi, Kokubunji, Tokyo 185-8533, Japan RION CO., LTD. Calibration Room

We hereby certify that the results of this calibration were as follows.

Issue date : 09/11/2022 (DD/MM/YYYY)

Junichi Kawamura
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1000.0 Hz	2.7×10^{-4} Hz

Working measurement standard universal counter:
Type : 53132A
Serial number : MY40005574
(JCSS Calibration Certificate No. 2208001889940)

2. Total distortion

Measured value
0.2 %

Working measurement standard distortion meter:
Type : VA-2230A
Serial number : 11076061
(A2LA Calibration Certificate No. 1502-03109)

- closing -

Appendix F
EM&A Monitoring Schedules

Impact Monitoring Schedule for Tung Chung Line Extension Contract 1202 - Tung Chung East Station and Associated Enabling Works for Track Diversions (July 2023) (Version 1.0)

July 2023						
Sun	Mon	Tue	Wed	Thur	Fri	Sat
						1
2	3 Impact Dust Monitoring Noise Monitoring	4	5	6	7	8 Impact Dust Monitoring
9	10	11	12	13	14 Impact Dust Monitoring Noise Monitoring	15
16	17	18	19	20 Impact Dust Monitoring Noise Monitoring	21	22
23	24	25	26 Impact Dust Monitoring Noise Monitoring	27	28	29
30	31					

Tentative Impact Monitoring Schedule for Tung Chung Line Extension Contract 1202 - Tung Chung East Station and Associated Enabling Works for Track Diversions (August 2023) (Version 1.0)

August 2023						
Sun	Mon	Tue	Wed	Thur	Fri	Sat
		1 Impact Dust Monitoring Noise Monitoring	2	3	4	5
6	7 Impact Dust Monitoring Noise Monitoring	8	9	10	11	12 Impact Dust Monitoring
13	14	15	16	17	18 Impact Dust Monitoring Noise Monitoring	19
20	21	22	23	24 Impact Dust Monitoring Noise Monitoring	25	26
27	28	29	30 Impact Dust Monitoring Noise Monitoring	31		

The schedule may be changed due to unforeseen circumstances (adverse weather, etc.)

Air Quality Monitoring Station:
DM1b - Ground floor, Ying Yuet House

Noise Monitoring Station:
NM1 - Ying Tung Estate

Appendix G
Air Quality Monitoring Results and their Graphical Presentations

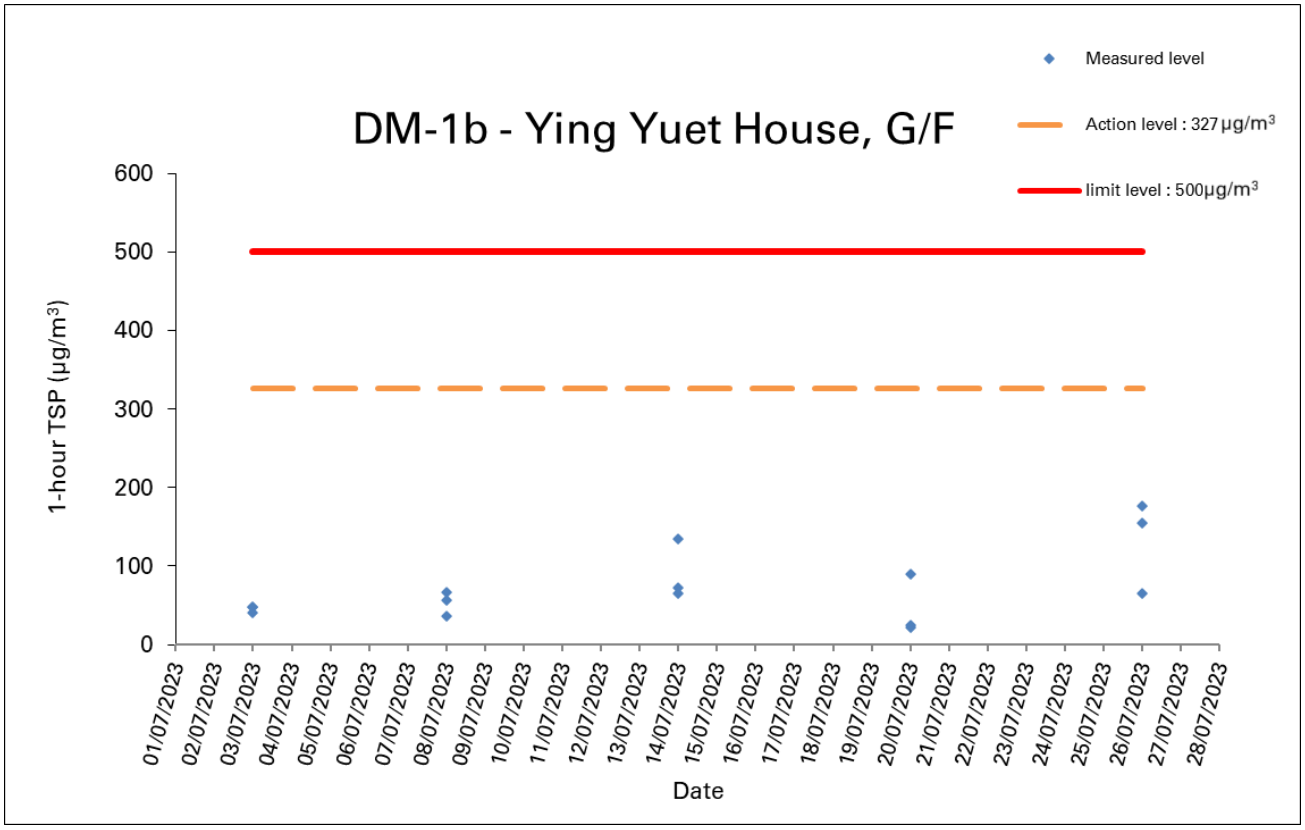
Appendix G

1-hour TSP Impact Monitoring Result for

Tung Chung Line Extension- Contract 1202 Tung Chung East Station

Date	Weather	Start Time (hh:mm)	End time (hh:mm)	Concentration $\mu g/m^3$	Action Level $\mu g/m^3$	Limit Level $\mu g/m^3$
3 Jul 2023	Fine	9:39	10:39	40	327	500
3 Jul 2023	Fine	10:45	11:45	48		
3 Jul 2023	Fine	11:49	12:49	48		
8 Jul 2023	Sunny	10:08	11:08	67		
8 Jul 2023	Sunny	11:12	12:12	57		
8 Jul 2023	Sunny	12:16	13:16	36		
14 Jul 2023	Sunny	12:36	13:36	134		
14 Jul 2023	Sunny	13:40	14:40	72		
14 Jul 2023	Sunny	14:45	15:45	66		
20 Jul 2023	Fine	9:16	10:16	90		
20 Jul 2023	Fine	10:19	11:19	22		
20 Jul 2023	Fine	11:21	12:21	25		
26 Jul 2023	Fine	10:00	11:00	65		
26 Jul 2023	Fine	11:03	12:03	177		
26 Jul 2023	Fine	12:06	13:06	154		
			Average	73		
			Max	177		
			Min	22		

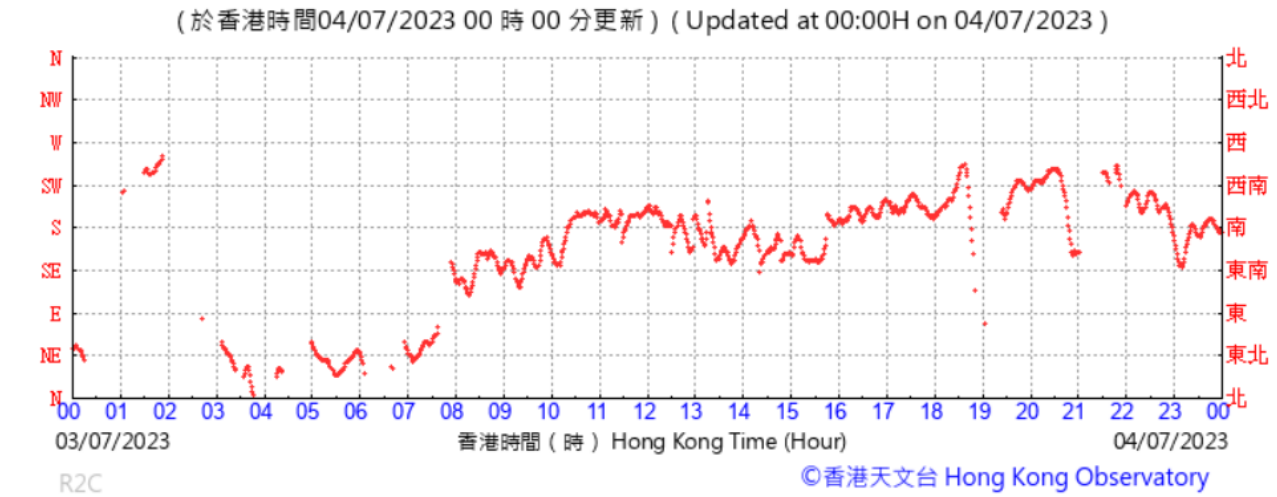
Graphical Presentation of Impact 1-hour TSP Monitoring results for Tung Chung Line Extension- Contract 1202 Tung Chung East Station



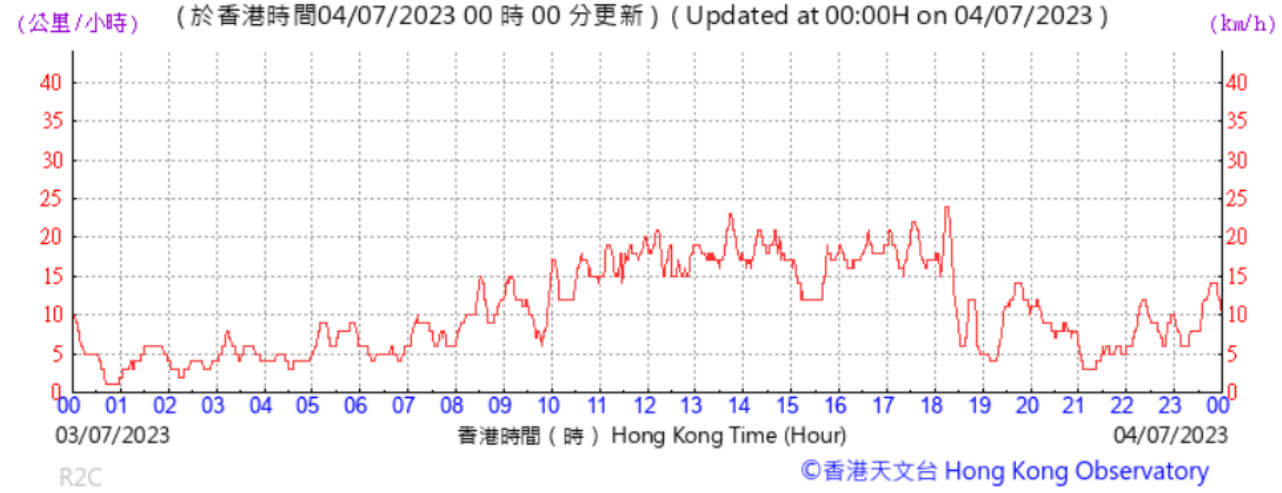
Extract of Meteorological Observations for Chek Lap Kok Automatic Weather Station

July 2023

Wind Direction:



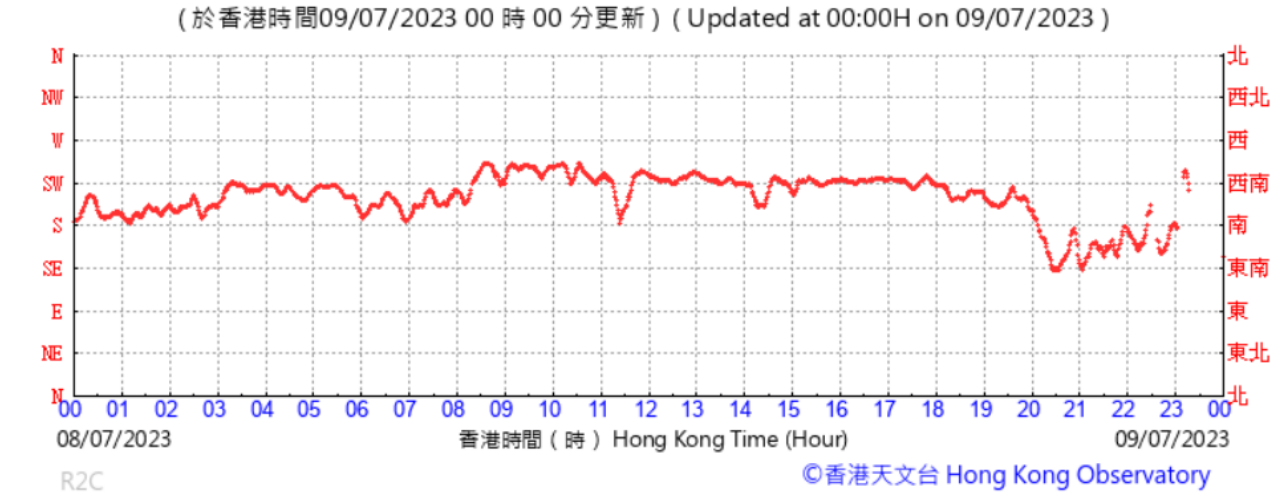
Wind Speed:



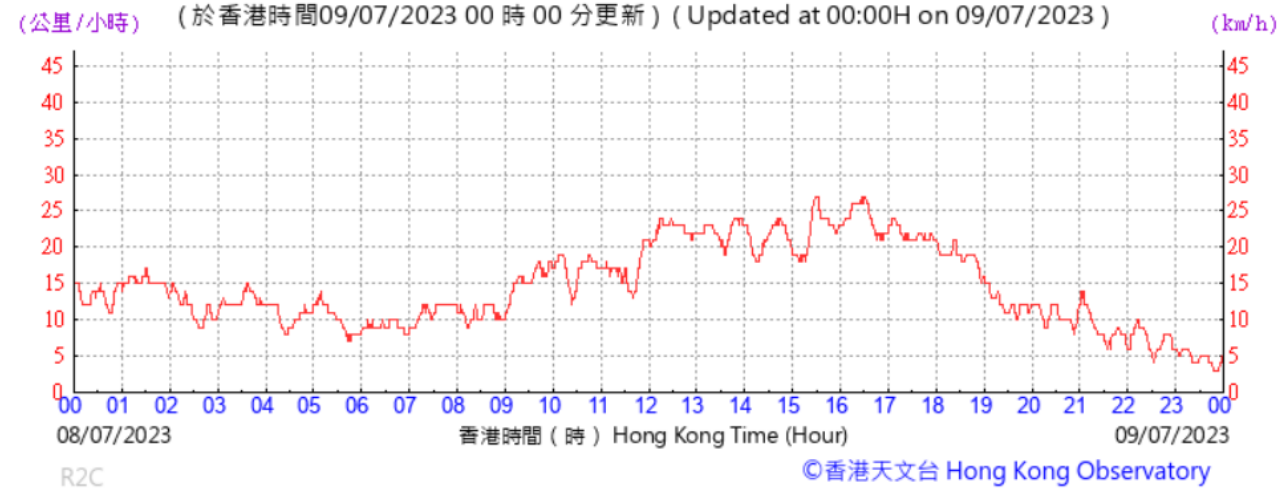
Extract of Meteorological Observations for Chek Lap Kok Automatic Weather Station

July 2023

Wind Direction:



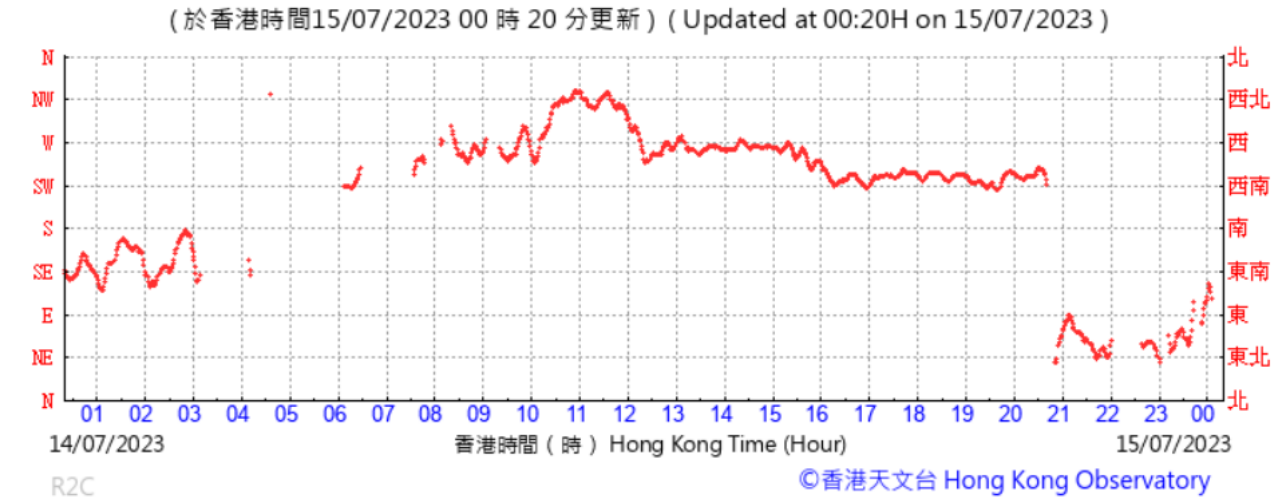
Wind Speed:



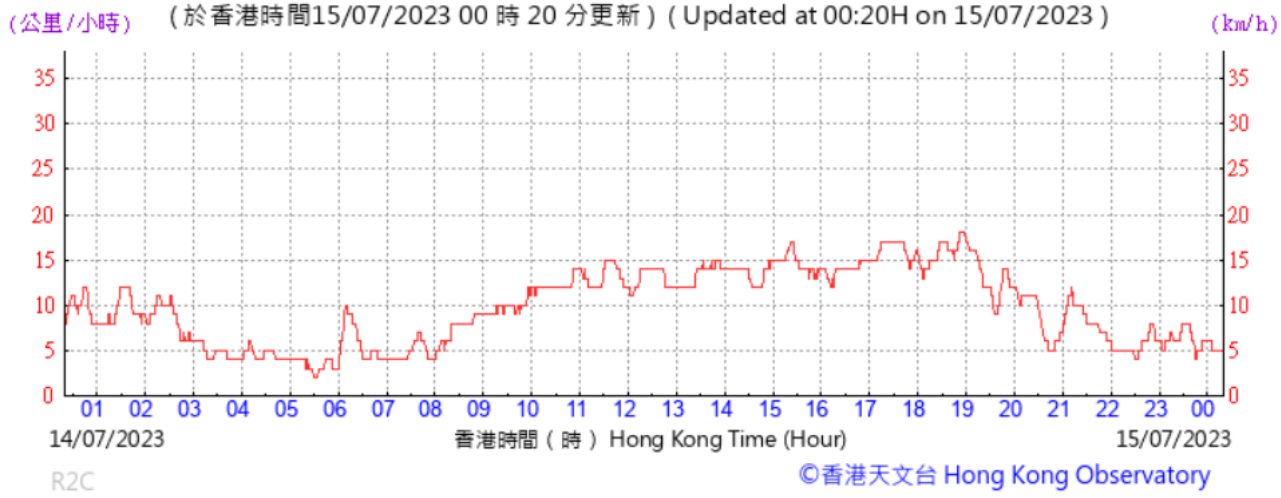
Extract of Meteorological Observations for Chek Lap Kok Automatic Weather Station

July 2023

Wind Direction:



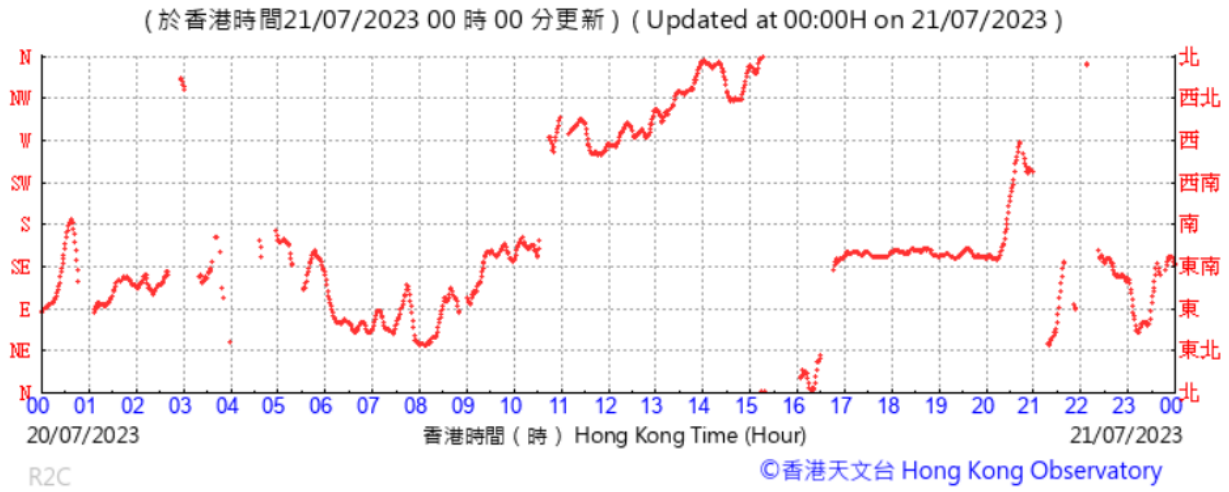
Wind Speed:



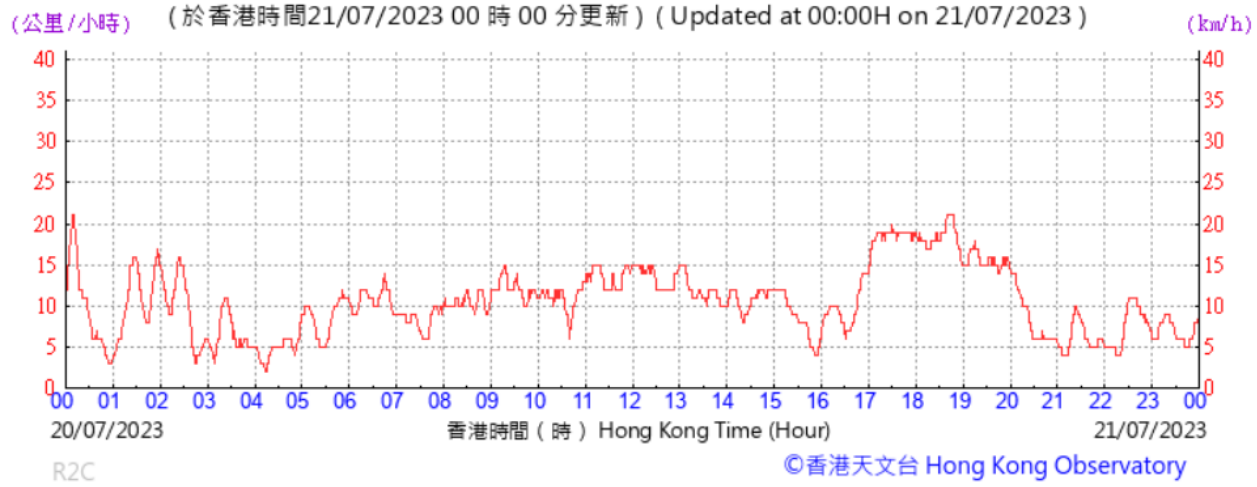
Extract of Meteorological Observations for Chek Lap Kok Automatic Weather Station

July 2023

Wind Direction:



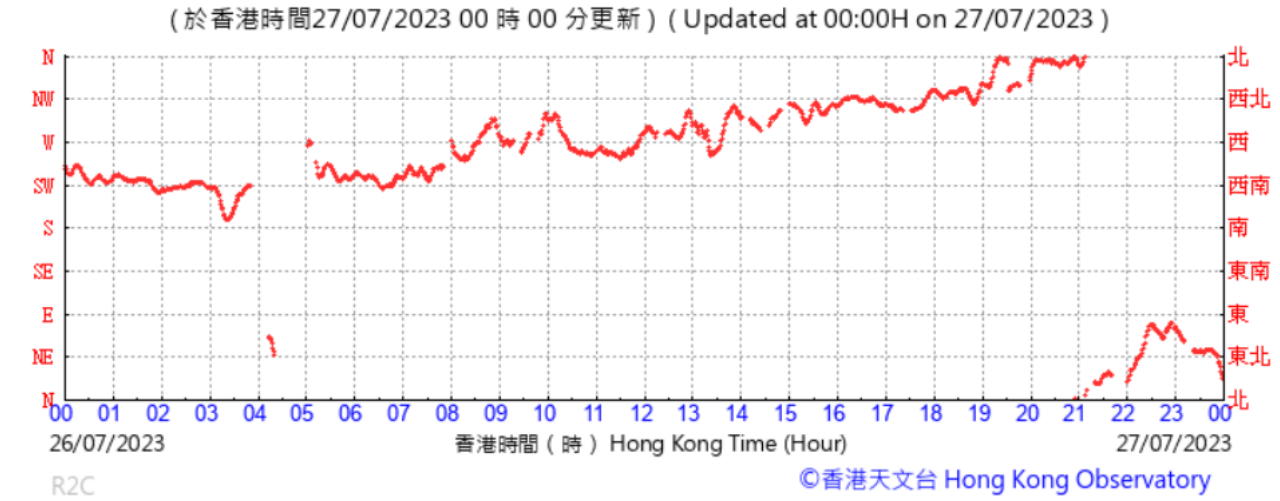
Wind Speed:



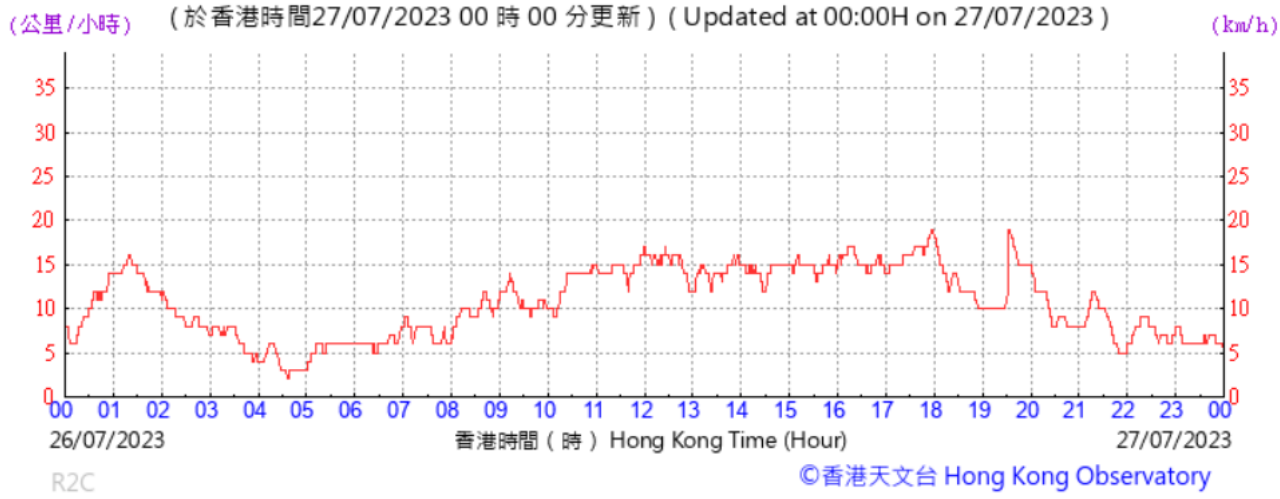
Extract of Meteorological Observations for Chek Lap Kok Automatic Weather Station

July 2023

Wind Direction:



Wind Speed:



Appendix H
Noise Monitoring Results and their Graphical Presentations

Appendix H Regular Construction Noise Monitoring Results

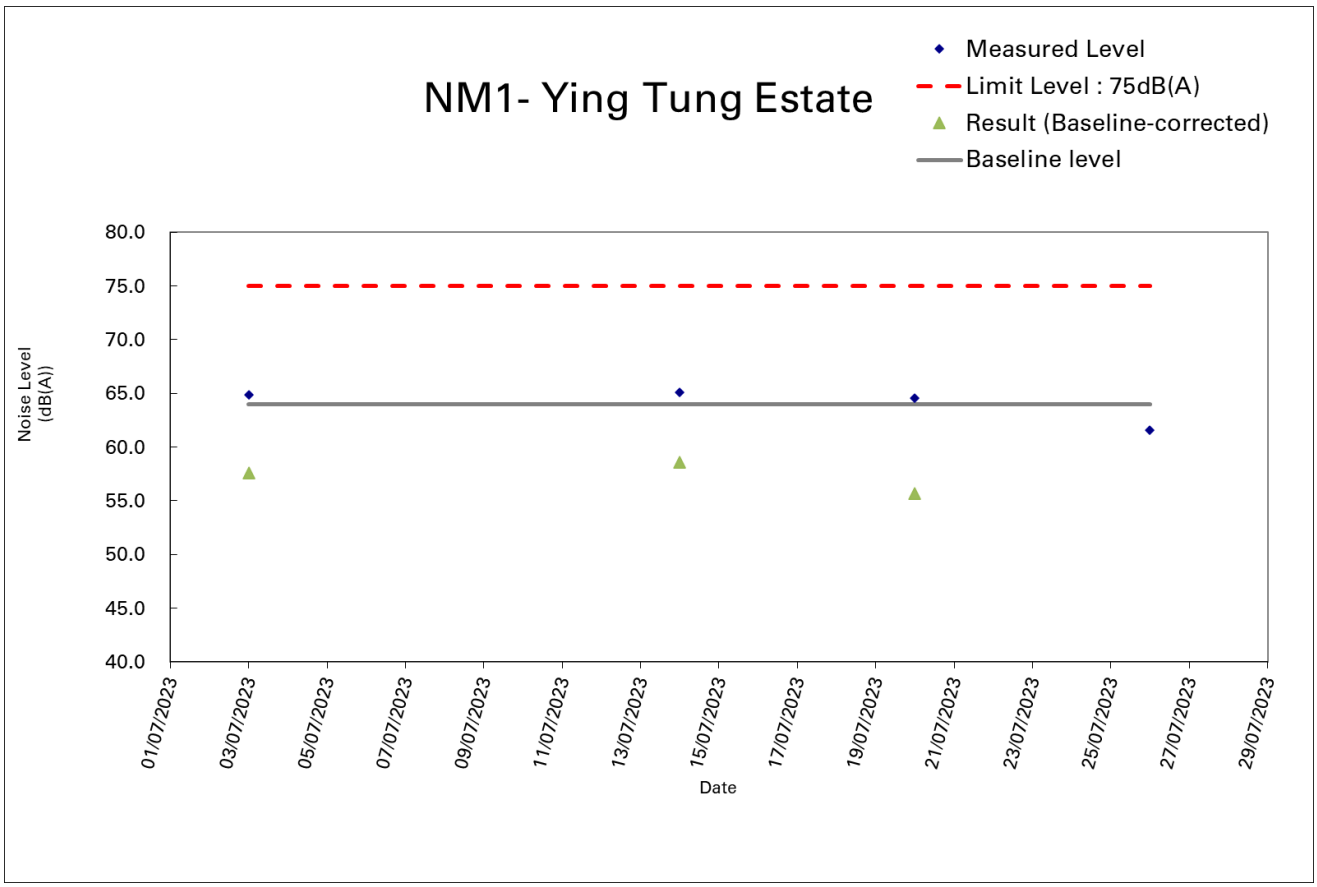
Daytime Noise Monitoring Results at Station NM1 (Ying Tung Estate)

Date	Weather	Start Time	Measured L_{eq} (30-min) (dB(A))+	Baseline Level (dB(A))	Results (dB(A)) (Baseline-corrected Leq, 30mins)+	Limit Level (dB(A))	Exceedance (Y/N)
3 July 2023	Fine	11:15	64.9	64.0	57.6	75	N
14 July 2023	Sunny	12:49	65.1	64.0	58.6		N
20 July 2023	Fine	12:23	64.6	64.0	55.7		N
26 July 2023	Fine	10:47	61.6	64.0	Below Baseline Level		N

Note: Impact noise level has been corrected with baseline noise level

+ : Façade measurement

Appendix H Regular Construction Noise Monitoring Results



Remark: The data on 26 July 2023 was below baseline level, thus no baseline corrected result was shown.

Appendix I
Event Action Plan

Event/Action Plan for Construction Dust Monitoring

Event	Action			
	ET	**IEC**	**PM**	**Contractor**
Action level exceedance for one sample	1. Repeat measurement to confirm finding; 2. If exceedance is confirmed, inform Contractor, IEC and PM; 3. Identify source, investigate the causes of exceedance and propose remedial measures; 4. Discuss with the Contractor, IEC and PM on the remedial measures required; 5. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, PM and Contractor on possible remedial measures; 4. Review and advise the ET and PM 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 PM 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 PM; 3. Identify source, investigate the causes of exceedance and propose remedial measures; 4. Advise the Contractor and PM on the effectiveness of the proposed remedial measures; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and PM 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, PM and Contractor on possible remedial measures; 4. Review and advise the ET and PM 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 PM, ET and IEC within three working days of notification for agreement; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.

Event	Action			
	ET	IEC	PM	Contractor
Limit level exceedance for one sample	1. Repeat measurement to confirm finding; 2. If exceedance is confirmed, inform IEC, PM, Contractor and EPD; 3. Increase monitoring frequency to daily; 4. Discuss with the PM, IEC and Contractor on the remedial measures and assess effectiveness; 5. Keep PM, 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, PM and Contractor on possible remedial measures; 4. Review and advise the ET and PM on the effectiveness of the proposed remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Review and agree on the remedial measures proposed by the Contractor; 3. Ensure remedial measures properly implemented; 4. Supervise implementation of remedial measures.	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 PM, ET and IEC within three working days of notification for agreement; 4. Implement the agreed proposals; 5. Amend proposal if appropriate.

Event	Action			
	ET	IEC	PM	Contractor
Limit level exceedance for two or more consecutive samples	1. Repeat measurement to confirm finding; 2. If exceedance is confirmed, inform IEC, PM, Contractor and EPD; 3. Increase monitoring frequency; 4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 5. Arrange meeting with IEC and PM to discuss the remedial actions to be taken; 6. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and PM informed of the results; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET 2. Discuss amongst PM, ET, and Contractor on the potential remedial actions; 3. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the PM 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 PM, 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 PM until the exceedance is abated.

Note:
ET – Environmental Team
IEC – Independent Environmental Checker
PM – Project Manager

Event/Action Plan for Construction Noise Monitoring

Event	Action			
	ET	**IEC**	**PM**	**Contractor**
Action Level Exceedance	1. Notify IEC, PM 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 PM 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 PM; 2. Submit noise mitigation proposals to IEC and PM; 3. Implement noise mitigation proposals.
Limit Level Exceedance	1. Inform IEC, PM, EPD and Contractor; 2. Repeat measurements to confirm findings; 3. Increase monitoring frequency; 4. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 5. Inform IEC, PM and EPD the causes	1. Check monitoring results and discuss amongst PM, ET, and Contractor on the potential remedial actions; 2. Ensure remedial measures properly implemented; and 3. Review Contractors	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	1. Identify source and carry out investigation and report the investigation to the ET, IEC and PM; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial actions to PM, ET and IEC within 3 working days of notification;

	and actions taken for the exceedances; 6. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and PM informed of the results; 7. If exceedance stops, cease additional monitoring.	remedial actions whenever necessary to assure their effectiveness and advise the PM accordingly.	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.	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 PM until the exceedance is abated.

Note:
ET – Environmental Team
IEC – Independent Environmental Checker
PM – Project Manager

Appendix J
Cumulative Statistics of Exceedances, Complaints, Notification of Summons and Successful Prosecutions

Appendix J

Cumulative Statistics of Exceedances, Complaints, Notification of Summons and Successful Prosecutions

	Date Received	Subject	Status	Total no. received in this month	Total no. received since project commencement
Environmental complaints	-	-	-	0	0
Notification of summons	-	-	-	0	0
Successful Prosecutions	-	-	-	0	0

Appendix K
Summary of Notification of Exceedance

Appendix K
Summary of Notification of Exceedance

Environmental Parameter	No. of Exceedance This Month		Cumulative No. of Exceedance Project-to-Date	
Exceeded Level	Action Level	Limit Level	Action Level	Limit Level
Air Quality (Construction Dust- 1-hour TSP)	0	0	0	0
Noise (Construction Noise-$L_{eq(30min),dB(A)}$)	0	0	0	0
Total	0	0	0	0

Appendix L
Waste Flow Table

Appendix L
Monthly Summary Waste Flow Table
Contract 1202 – Tung Chung East Station and Associated Enabling Works for Track Diversions
Reporting Month: July 2023

Month	Actual Quantities of Inert Construction Materials Generated Monthly					
	(a) Total Quantity Generated (a=b+e)	(b) Hard Rock and Large Broken Concrete	(c) Reused in the Contract	(d) Reused in other Projects	(e) Disposed of as Public Fill	(f) Imported Fill
	(in m^3)	(in m^3)	(in m^3)	(in m^3)	(in m^3)	(in m^3)
Jun-23	0.000	0.000	0.000	0.000	0.000	0.000
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000
Jul-23	0.000	0.000	0.000	0.000	0.000	0.000
Aug-23	--	--	--	--	--	--
Sep-23	--	--	--	--	--	--
Oct-23	--	--	--	--	--	--
Nov-23	--	--	--	--	--	--
Dec-23	--	--	--	--	--	--
Total	0.000	0.000	0.000	0.000	0.000	0.000

Month	Actual Quantities of Non-inert Construction Materials Generated Monthly					
	(g) Metals	(h) Paper/ cardboard packaging	(i) Plastics	(j) Chemical Waste	(k) Recyclable Yard Waste	(l) Others, e.g. General Refuse disposed of at Landfill
	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)
	generated	generated	generated	generated	generated	generated
Jun-23	0.000	0.000	0.000	0.000	0.000	0.000
Sub-total	0.000	0.000	0.000	0.000	0.000	0.000
Jul-23	0.000	0.000	0.000	0.000	0.000	67.330
Aug-23	--	--	--	--	--	--
Sep-23	--	--	--	--	--	--
Oct-23	--	--	--	--	--	--
Nov-23	--	--	--	--	--	--
Dec-23	--	--	--	--	--	--
Total	0.000	0.000	0.000	0.000	0.000	67.330