Vol. 1 of 5

EP-457/2013/D

Central Kowloon Route

Central Tunnel

Contract No. HY/2018/08

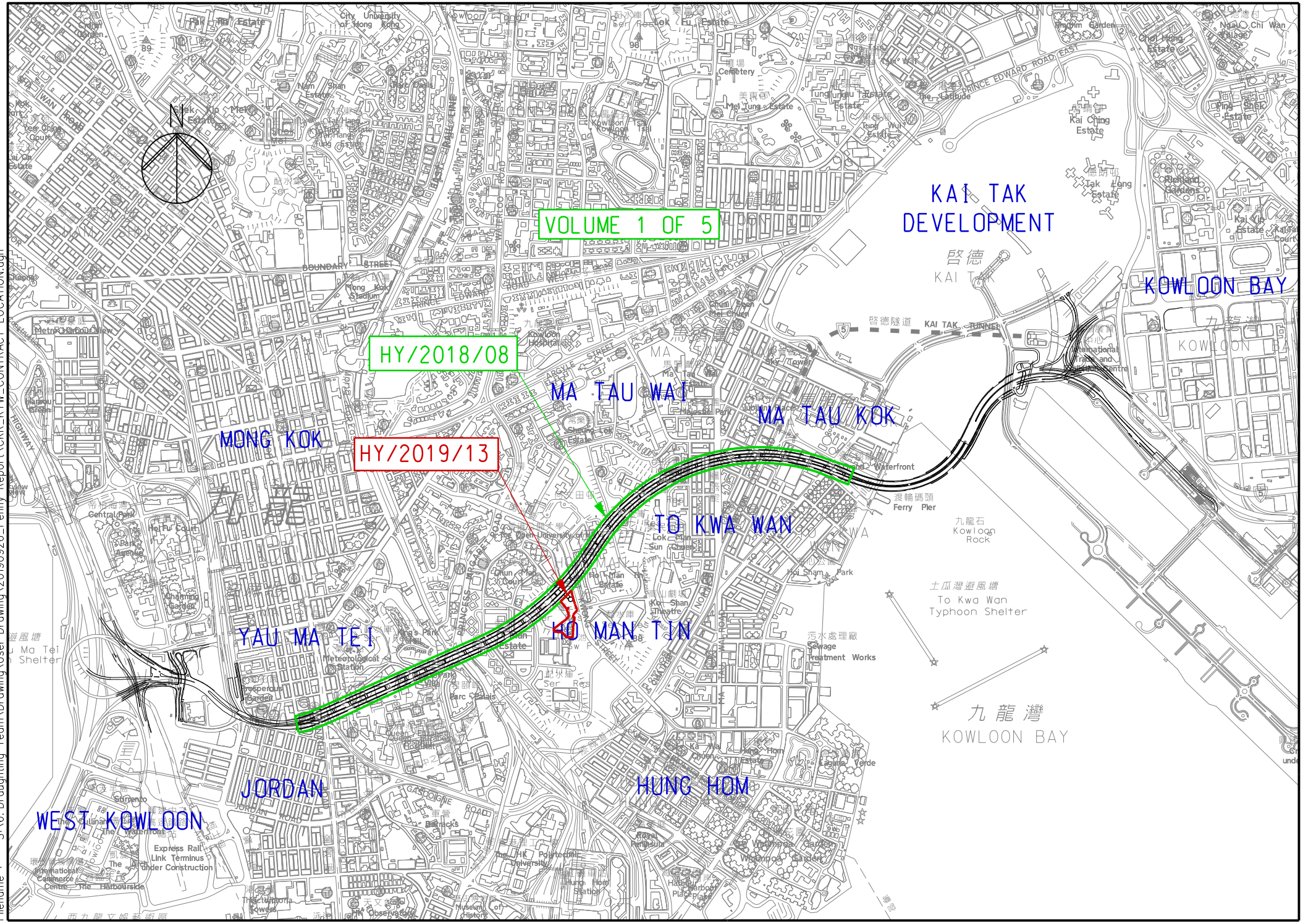
&

Buildings, Electrical and Mechanical Works

Contract No. HY/2019/13

(Ho Man Tin area)

February 2024



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Central Kowloon Route

Buildings, Electrical and Mechanical Works

Contract No. HY/2019/13

(Ho Man Tin area)

Gammon Construction Limited

Contract No. HY/2019/13
Central Kowloon Route – Buildings, Electrical and Mechanical Works
(Ho Man Tin Area)

Monthly EM&A Report No. 2
(February 2024)

Version 2.0

Date of Report: 8 March 2024

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

REMARKS:

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

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

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

ERM

Environmental Permit No. EP-457/2013/D

Central Kowloon Route

Independent Environmental Checker Verification

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

Reference Document/Plan

~~Document~~/Plan to be ~~Certified~~/ Verified:	Monthly EM&A Report No.2 (Version 2.0) for Ho Man Tin Area
Date of Report:	8 March 2024
Date received by IEC:	8 March 2024

Reference EP Condition

Environmental Permit Condition: 3.4

Submission of Monthly EM&A Report of the Project

3.4 Four hard copies and one electronic copy of monthly EM&A Report shall be submitted to the Director within 2 weeks after the end of each reporting month throughout the entire construction period. The EM&A Reports shall include a summary of all non-compliance. The submissions shall be certified by the ET Leader and verified by the IEC as complying with the requirements as set out in the EM&A Manual before submission to the Director. Additional copies of the submission shall be provided to the Director upon request by the Director.

IEC Verification

I hereby verify that the above referenced ~~document~~/plan complies with the above referenced condition of EP-457/2013/D.

Ms Mandy To Date: 11 March 2024

Independent Environmental Checker

Our ref: 0436942_IEC Verification Cert_BEM_Monthly EM&A Rpt (HMT) No.2_20240311.docx

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EXECUTIVE SUMMARY

Introduction

1. This is the 2nd Monthly Environmental Monitoring and Audit (EM&A) Report prepared by the Environmental Team (ET), Cinotech Consultants Ltd., for Contract No. HY/2019/13 "Central Kowloon Route – Buildings, Electrical and Mechanical Works". This report summarized the monitoring results and audit findings of the EM&A programme under the issued EP No. EP-457/2013/D, and in accordance with the EM&A programme in Central Tunnel (Ho Man Tin Area) during the reporting period from 1st February 2024 – 29th February 2024.

2. The major site activities undertaken in Central Tunnel (Ho Man Tin Area) in the reporting month included:
   - Super-structure works.

Environmental Monitoring Works

3. Environmental monitoring for the Project was performed in accordance with the EM&A Manual and the monitoring results were checked and reviewed. Joint weekly site inspections with the representative of ET, Engineer Representative and the Contractor for for Contract No. HY/2019/13 were conducted on 7, 14, 20, 27 February 2024, whereas joint site inspection with the representative of IEC was conducted on 27 February 2024. The implementation of the environmental mitigation measures, Event and Action Plans and environmental complaint handling procedures were also checked.

4. A summary of the non-compliance (exceedance) during the reporting month (February 2024) and the investigation results and/or follow-up actions is provided below:

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

Noise Monitoring
- One (1) Action Level exceedance for construction noise was recorded.
- No Limit Level exceedance for construction noise was recorded.

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

Complaint Handling, Prosecution and Public Engagement

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

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

Event	Event Details		Follow-up/ Remedial Actions	Status/ Remarks
	Number	Brief Description		
Complaints Received	1	A complaint was received from 1823 on 7 Feb 2024 regarding noise nuisance caused by mechanical equipment at the construction site near Chung Hau St. and Fat Kwong St. after 7 pm.	Enhance mitigation measures including installation for noise barrier, and closely monitoring the noise source.	EPD and HyD have no further comment. The complainant has responded to the first reply. The handling of the complaint is in progress.
Notification of Summons and Prosecutions Received	0	-	-	-

Reporting Changes

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

Future Key Issues

7. The key works or activities will be anticipated in the coming two months are as follows:
   - Super-structure works.

1 INTRODUCTION

Background

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

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

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

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

1.5 The construction work on the Ho Man Tin area under Contract no. HY/2018/08 Central Kowloon Route – Central Tunnel was completed on 31 December 2023. Contract no. HY/2019/13 Central Kowloon Route – Buildings, Electrical and Mechanical Works in Ho Man Tin area was then commenced on 1 January 2024 and took over the site of Ho Man Tin area.

1.6 The baseline report for environmental monitoring was used the same as the HY/2018/08 on the Ho Man Tin area. The baseline air quality and noise monitoring were conducted by Acuity Sustainability Consulting Limited in January 2018. The baseline monitoring results are presented in the Approved Baseline Monitoring Reports in accordance with EP-457/2013/C Condition 3.3 under Contract no. HY/2014/09 Central Kowloon Route – Ho Man Tin Access Shaft.

1.7 This is the 2nd Monthly EM&A Report which summarises the impact monitoring results and audit findings for the EM&A programme in Central Tunnel (Ho Man Tin Area) during the reporting period from 1st February 2024 – 29th February 2024. The Central Tunnel (Ho Man Tin Area) site layout plan for the Project is shown in **Figure 1**.

Project Organizations

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

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

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

Table 1.1 Key Project Contacts

Party	Role	Contact Person	Phone No.
AMMJV	Engineer Representative	Mr. Tommy Wong	3695 0419
Cinotech	Environmental Team	Ms. Betty Choi	2151 2072
ERM	Independent Environmental Checker	Ms. Mandy To	2271 3113
GCL	Contractor	Mr. Sampson Lo	9752 9118

1.10 The Organizational Structure for Environmental Management is shown in **Figure 2**.

Construction Activities undertaken during the Reporting Month

1.11 The construction programme is presented in **Appendix M**.

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

- Super-structure works.

Summary of EM&A Requirements

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

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

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

Statues of Environmental Licensing and Permitting

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

Table 1.2 Summary of Environmental Licensing and Permit Status

Permit / License No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
EP-457/2013/D	15 Jun 2021	N/A	Valid
Notification of Construction Works under Air Pollution Control Ordinance (APCO)			
457345	19 Jun 2020	End of Project	Valid
Billing Account for Construction Waste Disposal			
7037679	26 Jun 2020	N/A	Valid
Registration of Chemical Waste Producer – Ho Man Tin			
5213-236-G2347-61	28 Nov 2023	N/A	Valid
Wastewater Discharge Licence - Ho Man Tin			
WT10002215-2023	2 Feb 2024	31 Jan 2029	Valid
Construction Noise Permit - Ho Man Tin			
GW-RE0016-24	14 Jan 2024	13 Apr 2024	Valid

2 AIR QUALITY

Monitoring Requirements

2.1 According to EM&A Manual under the EP, 1-hour and 24-hour TSP monitoring were conducted to monitor the air quality for this Project. For regular impact monitoring, a sampling frequency of at least once in every six days at all of the monitoring stations for 24-hour TSP monitoring. For 1-hour TSP monitoring, the sampling frequency of at least three times in every six days shall be undertaken when the highest dust impact occurs. **Appendix A** shows the established Action/Limit Levels for the environmental monitoring works.

Monitoring Locations

2.2 Only one designated monitoring station was selected for 1-hour and 24-hour TSP impact dust monitoring programme. Both dust monitoring was conducted at the designated monitoring station (M-A3).

2.3 **Table 2.1** describes the air quality monitoring locations, which are also depicted in **Figure 3**.

Table 2.1 Locations for Air Quality Monitoring

Monitoring Stations	Locations	Location of Measurement
M-A3	S.K.H. Tsoi Kung Po Secondary School	Rooftop (about 3/F) Area

Monitoring Equipment

2.4 **Table 2.2** summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates are attached in **Appendix B**.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Serial No.	Quantity
Calibrator	TISCH TE-5025A	3864	1
1-hour TSP Dust Meter	Dust Monitor System OC-9200	OC20210316224101	1
High Volume Sampler	TE-5170 c/w of TSP sampling inlet	2204	1
Wind Anemometer	C-OC-9200-wind	OC20210316224101	1

Monitoring Parameters, Frequency and Duration

2.5 **Table 2.3** summarizes the monitoring parameters and frequencies of impact dust monitoring for the whole construction period. The air quality monitoring schedule for the reporting month is shown in **Appendix D**.

Table 2.3 Impact Dust Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hour TSP	Three times / 6 days
24-hour TSP	Once / 6 days

Monitoring Methodology and QA/QC Procedure

1-hour TSP Monitoring

Measuring Procedures

2.6 The measuring procedures of the 1-hour dust meters were in accordance with the Manufacturer's Instruction Manual as follows: *(OC-9200 Dust Monitoring System)*

- The 1-hour dust meter is placed at least 1.3 meters above ground.
- Set POWER to "ON" and make sure that the battery level was not flash or in low level.
- Allow the instrument to stand for about 3 minutes and then the cap of the air sampling inlet has been released.
- Push the knob at MEASURE position.
- Set time/mode setting to [BG] by pushing the time setting switch. Then, start the background measurement by pushing the start/stop switch once. It will take 6 sec. to complete the background measurement.
- Push the time setting switch to change the time setting display to [MANUAL] at the bottom left of the liquid crystal display.
- Finally, push the start/stop switch to stop the measuring after 1 hour sampling.
- Information such as sampling date, time, count value and site condition were recorded during the monitoring period.

Maintenance/Calibration

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

- Check and calibrate the meter by HVS to check the validity and accuracy of the results measured by direct reading method at 2-month intervals throughout all stages of the air quality monitoring.

24-hour TSP Monitoring

Instrumentation

2.9 High volume (HVS) samplers (Model TE-5170), completed with appropriate sampling inlets, were employed for 24-hour TSP monitoring. The sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complied with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50). Moreover, the HVS also met all the requirements in section 2.5 of the updated EM&A Manual.

2.10 The positioning of the HVS samplers are as follows:

- A horizontal platform was provided with appropriate support to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.
- Airflow around the sampler was unrestricted.
- The sampler was more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.

Operating/analytical procedures for the operation of HVS

2.11 Operating/analytical procedures for the air quality monitoring are highlighted as follows:

- Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 1.1 m3/min. and 1.4 m3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
- For TSP sampling, fiberglass filters have a collection efficiency of > 99% for particles of 0.3μm diameter were used.
- The power supply was checked to ensure the sampler worked properly. On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.
- The filter holding frame was then removed by loosening the four nuts and a weighted and conditioned filter was carefully centred with the stamped number upwards, on a supporting screen.
- The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- The shelter lid was closed and secured with the aluminium strip.
- The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found by using the filter number).
- After sampling, the filter was removed and sent to the HOKLAS laboratory (High Precision Chemical Testing Ltd.) for weighing. The elapsed time was also recorded.

- Before weighing, all filters were equilibrated in a conditioning environment for 24 hours.
- The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%.

Maintenance/Calibration

2.12 The following maintenance/calibration was required for the HVS:

- The high-volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- High volume samplers were calibrated at bi-monthly intervals using TE-5025A Calibration Kit through\hout all stages of the air quality monitoring.

Results and Observations

2.13 All 1-hour TSP monitoring was conducted as scheduled in the reporting month.

2.14 No Action/Limit Level exceedance of the 1-hour TSP monitoring was recorded.

2.15 All 24-hour TSP monitoring was conducted as scheduled in the reporting month.

2.16 No Action/Limit Level exceedance of the 24-hour TSP monitoring was recorded.

2.17 The weather information for the reporting month is summarized in **Appendix C**.

2.18 The monitoring data and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendix E** and **Appendix F** respectively.

2.19 No exceedance was recorded for the air quality monitoring. The summary of exceedance record in reporting month is shown in **Appendix H**.

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

2.21 According to our field observations during the monitoring, the major dust source identified at the designated air quality monitoring stations are road traffic dust, exposed site area and open stockpiles, excavation works and site vehicle movements.

3 NOISE

Monitoring Requirements

3.1 According to EM&A Manuals under the EP, construction noise monitoring was conducted to monitor the construction noise arising from the construction activities. The regular monitoring frequency for each monitoring station shall be on a weekly basis and conduct one set of measurements between 0700 and 1900 hours on normal weekdays. **Appendix A** shows the established Action and Limit Levels for the environmental monitoring works.

Monitoring Locations

3.2 Only one designated monitoring station was selected for the noise monitoring programme. Noise monitoring was conducted at the designated monitoring station (M-N3).

3.3 **Table 3.1** describes the air quality monitoring locations, which are also depicted in **Figure 3**.

Table 3.1 Noise Monitoring Stations

Monitoring Stations	Locations	Location of Measurement
M-N3	S.K.H. Tsoi Kung Po Secondary School	Rooftop (about 3/F) Area

Monitoring Equipment

3.4 **Table 3.2** summarizes the noise monitoring equipment. Copies of calibration certificates are provided in **Appendix B**.

Table 3.2 Noise Monitoring Equipment

Equipment	Model and Make	Serial No.	Quantity
Sound Calibrator	SOUNDTEK ST-120	181001637	1
	Hangzhou Aihua Instruments Co., Ltd. AWA6021A	1023253, 1023064	2
Integrating Sound Level Meter	SVANTEK SVAN 979	27189	1
	BSWA Technology BSWA 308	570187, 580156	2

Monitoring Parameters, Frequency and Duration

3.5 **Table 3.3** summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix D**.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency	Measurement
M-N3	L_{10}(30 min.) dB(A) L_{90}(30 min.) dB(A) L_{eq}(30 min.) dB(A)	0700-1900 hrs on normal weekdays	Once per week	Façade

Monitoring Methodology and QA/QC Procedure

3.6 The procedures for noise monitoring were as follows:

- The Sound Level Meter was set on a tripod at a height of 1.2 m above the ground.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  — frequency weighting : A
  — time weighting : Fast
  — time measurement : 30 minutes
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- The wind speed was frequently checked with the portable wind meter.
- At the end of the monitoring period, the L_{eq}, L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused temporarily during periods of high intrusive noise if possible and observation was recorded when intrusive noise was not avoided.
- Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s.

Maintenance and Calibration

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

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

3.9 Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

Results and Observations

3.10 All construction noise monitoring was conducted as scheduled in the reporting month.

3.11 The Baseline Noise Level and the Noise Limit Level at the designated noise monitoring station are presented in **Table 3.4**.

Table 3.4 Baseline Noise Level and Noise Limit Level for Monitoring Stations

Monitoring Stations	Baseline Noise Level, dB (A)	Noise Limit Level, dB (A)
M-N3	67.7(1) (at 0700 – 1900 hrs on normal weekdays)	70(*) (at 0700 – 1900 hrs on normal weekdays)

(*) Noise Limit Level is 65 dB(A) during school examination periods.
Note (1): The noise level due to the construction work (CNL) was calculated by the following formula:

CNL = 10 log (10MNL/10 – 10BNL/10)

Remarks: MNL = Measured Noise Level, BNL = Baseline Noise Level

3.12 One (1) Action Level exceedance was recorded, as a complaint about Noise Nuisance was received on 7 Feb.

3.13 No Limit Level exceedance was recorded. The summary of exceedance record in reporting month is shown in **Appendix H**.

3.14 Noise monitoring results and graphical presentations are shown in **Appendix G**.

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

3.16 According to our field observations during the monitoring, the major noise sources identified at the designated noise monitoring stations are road traffic noise, site vehicle movement, excavation works and daily school activities.

4 WASTE MANAGEMENT

Monitoring Requirements

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

Results and Observations

4.2 The quantities of different types of waste generated in the reporting month are summarised in **Table 6.1**. Details of the amount of wastes generated by the major site activities of this Project during the reporting month is shown in **Appendix L**.

Table 4.1 Quantities of Waste Generated from the Project

Quantity							
	Inert C&D Materials		Non-inert C&D Materials				
Reporting Period	Total Quantity Generated (in '000m^3)	Disposed as Public Fill (in '000m^3)	Others, e.g. general refuse (in '000m^3)	Metals (in '000kg)	Paper/cardboard Packaging (in '000kg)	Plastics (in '000kg)	Chemical waste (in '000kg)
January 2024	0	0	0.294	0	0	0	0

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

5 LANDSCAPE AND VISUAL

Monitoring Requirements

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

Results and Observations

5.2 Bi-weekly inspection of the implementation of landscape and visual mitigation measures within the site boundaries of this Project was conducted on 14 & 27 February 2024. The implementation status of the landscape and visual mitigation measures in the reporting period are summarized in **Appendix J**. The summary of observations and recommendations made for landscape and visual mitigation measures during site audits are shown in **Table 6.1** of this report.

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

5.4 Should non-compliance of the landscape and visual impact occur, action in accordance with the action plan presented in **Appendix I** shall be performed.

6 ENVIRONMENTAL AUDIT

Site Audits

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

6.2 Site audits for Contract No. HY/2019/13 were conducted on 7, 14, 20, 27 February 2024 in the reporting month. Joint site inspection with the representative of IEC was conducted on 27 February 2024. No non-compliance was observed during the site audit.

Implementation Status of Environmental Mitigation Measures

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

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

Table 6.1 Observations and Recommendations of Site Inspections

Parameters	Date	Observations	Follow-up Actions
Water Quality	N/A	No environmental deficiency was identified in the reporting period.	N/A
Air Quality	N/A	No environmental deficiency was identified in the reporting period.	N/A
Noise	N/A	No environmental deficiency was identified in the reporting period.	N/A
Waste / Chemical Management	7 Feb 2024	Drip tray should be provided for chemicals and oils.	Chemicals and oils have been removed
Land Contamination	N/A	No environmental deficiency was identified in the reporting period.	N/A
Landscape and Visual	N/A	No environmental deficiency was identified in the reporting period.	N/A
Permits /Licences	N/A	No environmental deficiency was identified in the reporting period.	N/A

Implementation Status of Event and Action Plans

6.5 The Event Action Plans for air quality, noise and landscape and visual are presented in **Appendix I**.

Air Quality Monitoring

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

Noise Monitoring

- One (1) Action Level exceedance for noise was recorded.
- No Limit Level exceedance for noise was recorded.

Landscape and Visual Monitoring

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

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

6.6 One (1) environmental complaint and no warning, notifications of summons and successful prosecutions was received in the reporting month. The summary of environmental complaint, warning, summon and notification of successful prosecution for the Project is presented in **Appendix K**.

6.7 Status of required submission under EP-457/2013/D during the reporting period are summarized in **Table 6.1**.

Table 6.2 Status of Required Submission under Environmental Permit

EP Condition (EP-457/2013/D)	Submission	Submission Date
Condition 3.4	Monthly EM&A Report (January 2024)	14 February 2024

7 FUTURE KEY ISSUES

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

- Super-structure works

7.2 Key environmental issues in the coming two months include:

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

Monitoring Schedule for Next Month

7.3 The tentative environmental monitoring schedules for next month are shown in **Appendix D**.

8 CONCLUSIONS

8.1 This is the 2nd Monthly EM&A Report which presents the EM&A works undertaken in Ho Man Tin area during the reporting month from 1st February 2024 – 29th February 2024 in accordance with the EM&A Manual and the requirements under the EP.

Air Quality Monitoring

8.2 All 1-hr TSP monitoring was conducted as scheduled in the reporting month.

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

8.4 All 24-hr TSP monitoring was conducted as scheduled in the reporting month.

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

Construction Noise Monitoring

8.6 All construction noise monitoring was conducted as scheduled in the reporting month.

8.7 One (1) Action Level exceedance was recorded.

8.8 No Limit Level exceedance was recorded.

Landscape and visual

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

Site Audit

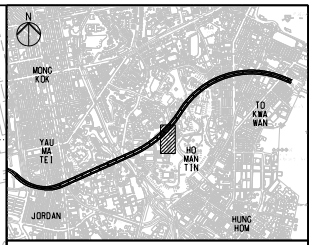
8.10 4 ET joint weekly environmental site inspections were conducted in the reporting month. Joint weekly site inspections with the representative of ET, Engineer Representative and the Contractor for Contract No. HY/2019/13 were conducted on 7, 14, 21, 27 February 2024, whereas joint site inspection with the representative of IEC was conducted on 27 February 2024. All environmental deficiencies observed during site inspections were rectified by the Contractor.

Complaint, Notification of Summons and Successful Prosecution

8.11 An environmental complaint about the Noise Nuisance at HVB was received in the reporting month. EPD and HyD have no further comment. The complainant has responded to the first reply. The handling of the complaint is in progress.

8.12 No notifications of summons and successful prosecutions were received in the reporting month.

FIGURES



KEY PLAN

NOTES:

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

LEGEND:

BOUNDARIES OF THE SITE

BUILDING SITE BOUNDARY

SETTING OUT TABLE

SETTING OUT POINT	COORDINATES	
	EASTING	NORTHING
HMT-VB-1	836721.312	819484.176
HMT-VB-2	836760.139	819437.827
HMT-VB-3	836722.349	819406.371

Rev. 修訂	Description 內容摘要	By 設計	Date 日期
01	TENDER ADDENDUM NO. 3	ML	12/19
00	ISSUE FOR TENDER	ML	09/19

ARUP MOTT MACDONALD

Arup-Mott MacDonald Joint Venture

Project title 工程名稱

Contract No. HY/2019/13

Central Kowloon Route -
Buildings, Electrical and Mechanical

Drawing title 圖紙名稱

GENERAL LAYOUT PLAN
HO MAN TIN VENTILATION
BUILDING

Drawing no. 圖紙編號	1	Rev. 修訂	01
Drawn By 繪圖	ML	Checked By 核對	AC
Approved By 批准人	RC		
Scale 比例	1:500 @ A1	Status 現況	TENDER

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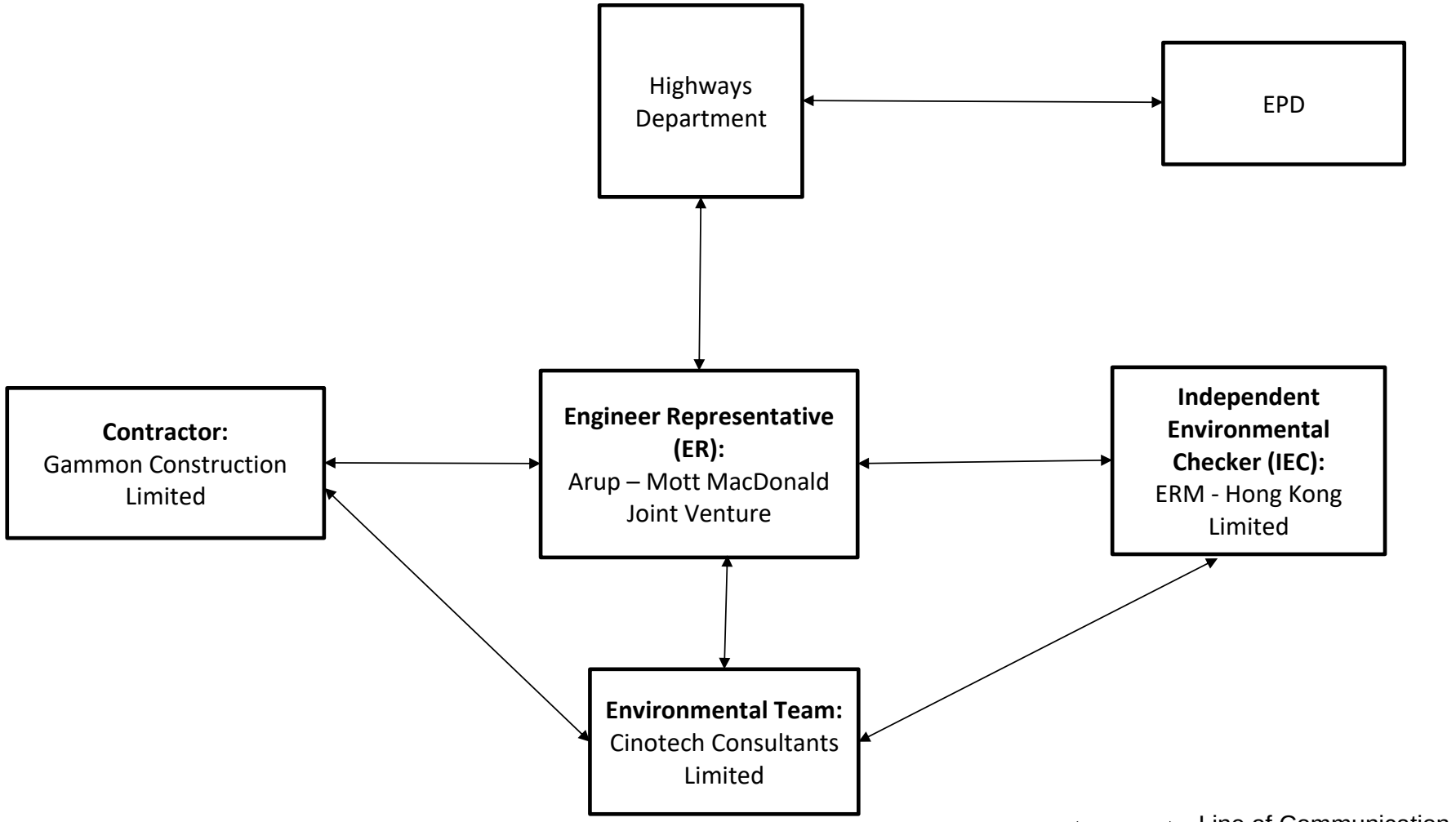
路政署
HIGHWAYS DEPARTMENT
主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE

Printed by : 12/23/2019
Filename : J:\287786-CKR\TENDER ADDENDUM\BEM\TENDER ADDENDUM NO.3\01\E-CKR_BEM_01_0032_DRG-01.dgn

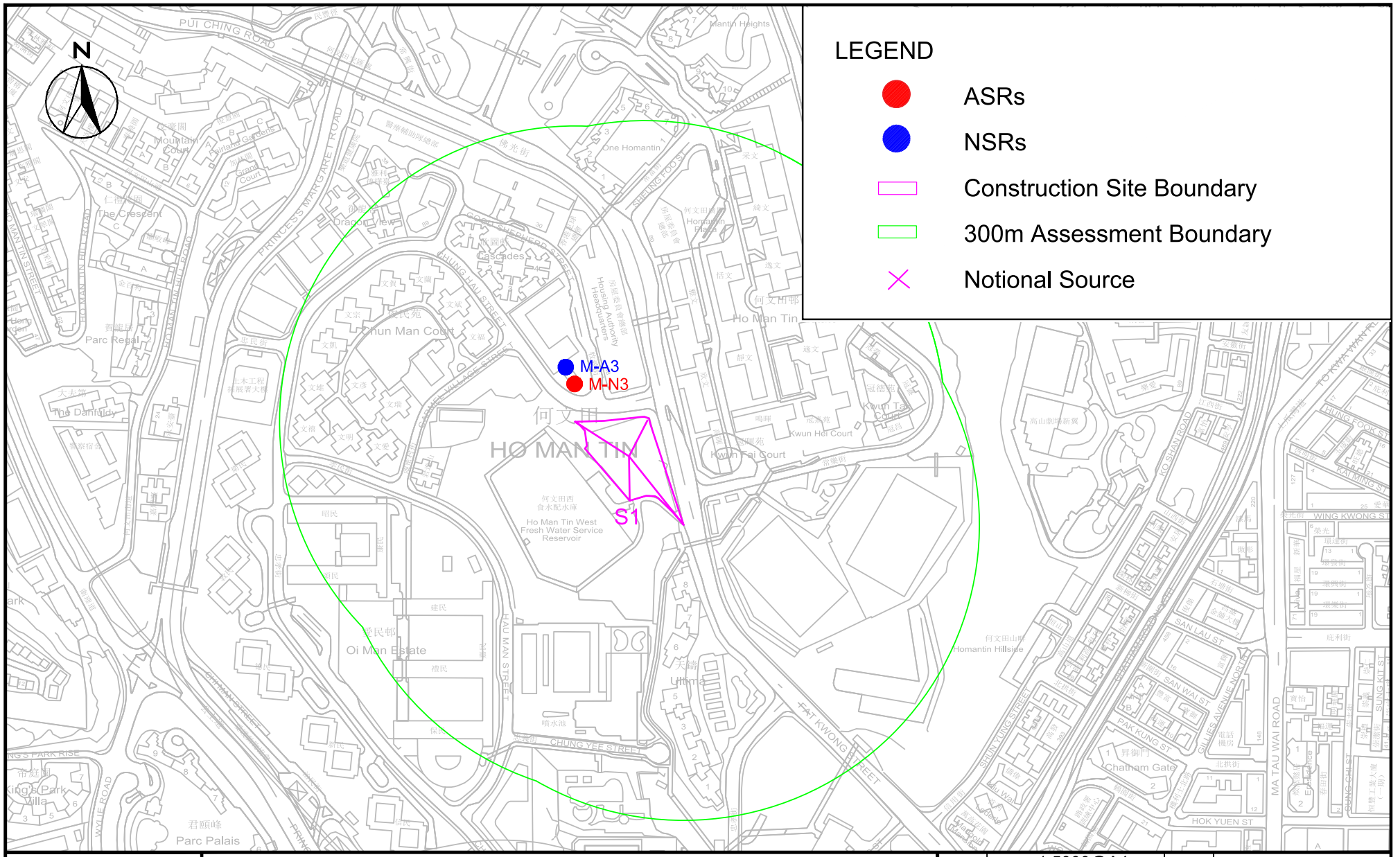


CINOTECH

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

Project Organisation For Environmental Monitoring and Audit

SCALE	N.T.S.	**DATE**	Nov 2020
CHECK	BC	**DRAWN**	EH
JOB NO.	MA20024	**FIGURE NO.**	2



CINOTECH
Cinotech Consultants Limited

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

Site Plan with Monitoring Locations - Ho Man Tin Area

SCALE	1:5000@A4	DATE	DEC 2023
CHECK	KC	DRAWN	DC
JOB No.	MA20024	FIGURE NO. 3	REV -

APPENDIX A
ACTION AND LIMIT LEVELS FOR AIR QUALITY AND NOISE

Appendix A – Action and Limit Levels

Table A-1 Action and Limit Levels for 1-Hour TSP

Monitoring Stations	Action Level, µg/m^3	Limit Level, µg/m^3
M-A3	333	500

Table A-2 Action and Limit Levels for 24-Hour TSP

Monitoring Stations	Action Level, µg/m^3	Limit Level, µg/m^3
M-A3	153	260

Table A-3 Action and Limit Levels for Construction Noise

Monitoring Stations	Action Level	Limit Level
M-N3	When one documented complaint is received	For Schools: 70dB(A) during normal teaching period and 65 dB(A) during examination periods

APPENDIX B
COPIES OF CALIBRATION CERTIFICATES

CERTIFICATE OF CALIBRATION

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler, hereinafter ("HVS")

Equipment Calibrated:		**Standard Equipment:**	
Type:	Dust Monitor System	Type:	High Volume Sampler
Model:	OC-9200	Model:	TE 5170
Equipment No.:	A-06-03	Equipment No.:	A-01-75
Serial No.:	OC20210316224101	Serial No.:	3499
Sensitivity.:	0.001mg/m3	Tisch Calibration Orifice No.:	3864

Date of Calibration:	22-Dec-23
Validity of Calibration Record:	21-Feb-24

Calibration

Calibration Points:	Time	High Volume Sampler	Dust Monitor System
	Minutes	Mass concetration [µg/m^3]	Mass concetration [µg/m^3]
		y Axis	**x Axis**
0	60	0	0
1	60	240.0	74.0
2	60	132.0	42.0
3	60	92.0	27.0
Average	60	116.0	35.8

With the aid of the mathematical model of Simple Linear Regression, the following values are calculated as:

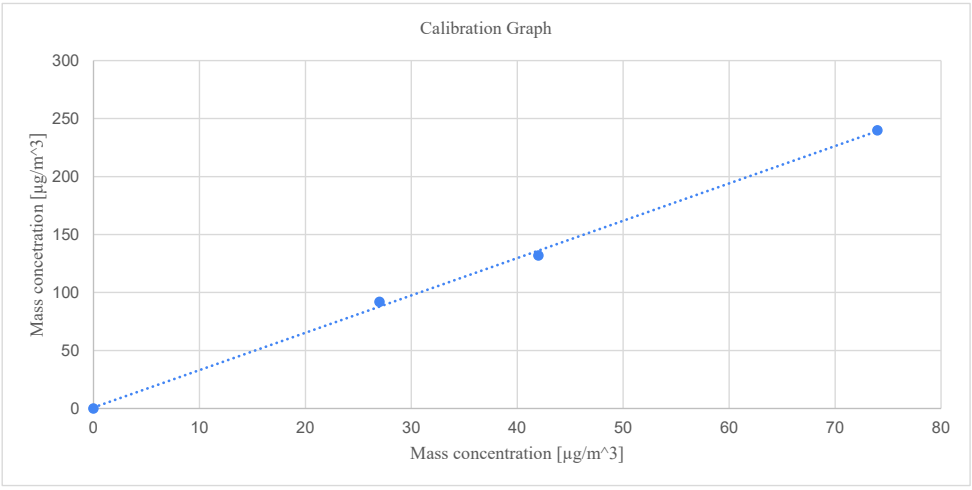
Slope:	3.22044281
Intercept:	0.86916951
Correlation Coefficient:	0.99939427

If the correlation coefficient is green (ie larger than 0.90), then no recalibration is required

Scale factor (K):	**3.2**	(to one decimal point)

Equation of line:

y(HVS)=3.6x(OC-9200)



In-house method in according to the instruction manual:
The OC-9200 was compared with a calibrated HVS; the result has been used to calculate the scale factor and correlation coefficient between the two equipment.
The filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Recorded by:	Signature:	Date:
Technical Officer (Wong Shing Kwai)		27-Dec-23
Checked by:	Signature:	Date:
Project Manager (Henry Leung)		27-Dec-23

CERTIFICATE OF CALIBRATION

It is certified that the item under calibration has been calibrated by corresponding calibrated High Volume Sampler, hereinafter ("HVS")

Equipment Calibrated:		**Standard Equipment:**	
Type:	Dust Monitor System	Type:	High Volume Sampler
Model:	OC-9200	Model:	TE 5170
Equipment No.:	A-06-03	Equipment No.:	A-01-75
Serial No.:	OC20210316224101	Serial No.:	3499
Sensitivity.:	0.001mg/m3	Tisch Calibration Orifice No.:	3864

Date of Calibration:	21-Feb-24
Validity of Calibration Record:	21-Apr-24

Calibration

Calibration Points:	Time	High Volume Sampler	Dust Monitor System
	Minutes	Mass concetration [µg/m^3]	Mass concetration [µg/m^3]
		y Axis	**x Axis**
0	60	0	0
1	60	235.0	72.0
2	60	125.0	40.0
3	60	90.0	26.0
Average	60	112.5	34.5

With the aid of the mathematical model of Simple Linear Regression, the following values are calculated as:

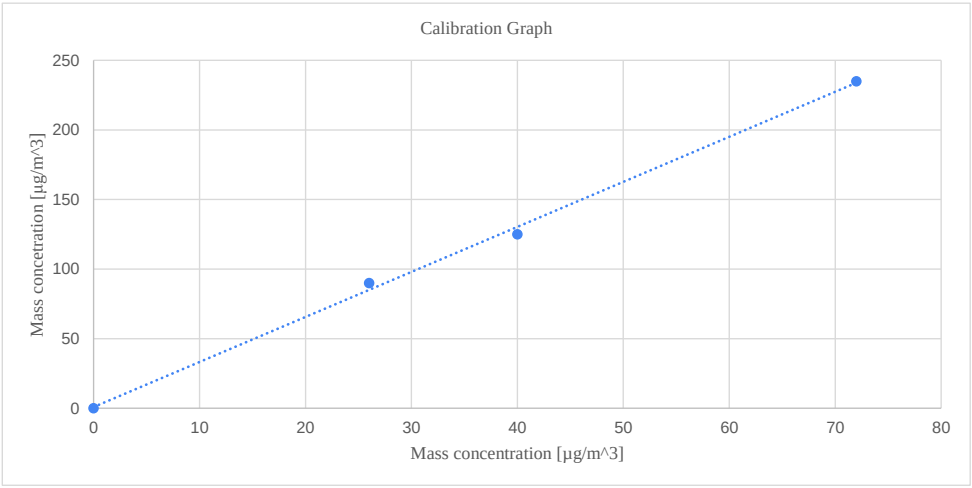
Slope:	3.23638385
Intercept:	0.84475732
Correlation Coefficient:	0.99902535

If the correlation coefficient is green (ie larger than 0.90), then no recalibration is required

Scale factor (K):	**3.2**	(to one decimal point)

Equation of line:

y(HVS)=3.6x(OC-9200)



In-house method in according to the instruction manual:
The OC-9200 was compared with a calibrated HVS; the result has been used to calculate the scale factor and correlation coefficient between the two equipment.
The filter papers are weighted by HOKLAS laboratory (HPCT Litimed)

Recorded by:	Signature:	Date:
Technical Officer (Wong Shing Kwai)		23-Feb-24
Checked by:	Signature:	Date:
Project Manager (Henry Leung)		23-Feb-24

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA20024/74/0001

Location. MA3 - SKH Tsoi Kung Po Secondary School

Date: 11-Dec-23 Next Due Date: 10-Feb-24 Operator: SK

Equipment No.: A-01-74 Model No.: TE-5170 Serial No. 2204

Ambient Condition			
Temperature, Ta (K)	294	Pressure, Pa (mmHg)	762.8

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05928	Intercept, bc	-0.03491
Last Calibration Date:	16-Jan-23	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	16-Jan-24	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

.

Calibration of TSP Sampler					
Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	16.3	4.07	69.28	10.3	3.24
2	12.4	3.55	60.50	8.2	2.89
3	9.1	3.04	51.92	6.4	2.55
4	5.5	2.37	40.49	4.2	2.07
5	3.3	1.83	31.50	3.1	1.78

By Linear Regression of Y on X

Slope , mw = **0.0392** **Intercept, bw =** **0.5157**

Correlation coefficient* = **0.9993**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.76**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 11-Dec-23

Checked by: Henry Leung Signature: Date: 11-Dec-23

High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. MA20024/74/0002

Location. M-A3 - S.K.H Tsoi Kung Po Secondary School

Date: 8-Feb-24 Next Due Date: 9-Apr-24 Operator: SK

Equipment No.: A-01-74 Model No.: TE-5170 Serial No. 2204

Ambient Condition			
Temperature, Ta (K)	286.5	Pressure, Pa (mmHg)	769.7

Orifice Transfer Standard Information					
Serial No.	3864	Slope, mc	0.05976	Intercept, bc	-0.05018
Last Calibration Date:	15-Jan-24	**mc x Qstd + bc = [ΔH x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	15-Jan-25	**Qstd = {[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$ -bc} / mc**			

.

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	[ΔH x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	15.4	4.03	68.24	10.7	3.36
2	12.6	3.64	61.80	8.6	3.01
3	9.2	3.11	52.93	6.7	2.66
4	5.9	2.49	42.56	4.5	2.18
5	3.3	1.86	32.04	3.1	1.81

By Linear Regression of Y on X

Slope , mw = **0.0427** **Intercept, bw =** **0.4007**

Correlation coefficient* = **0.9981**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

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

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

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

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **4.75**

Remarks:

Conducted by: Wong Shing Kwai Signature: Date: 8-Feb-24

Checked by: Henry Leung Signature: Date: 8-Feb-24

TISCH Environmental

RECALIBRATION DUE DATE:
January 15, 2025

Certificate of Calibration

Calibration Certification Information					
Cal. Date:	January 15, 2024	**Rootsmeter S/N:** 438320	**Ta:** 294	°K	
Operator:	Jim Tisch		**Pa:** 755.4	mm Hg	
Calibration Model #:	TE-5025A	**Calibrator S/N:** **3864**			

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4380	3.3	2.00
2	3	4	1	1.0270	6.4	4.00
3	5	6	1	0.9180	8.0	5.00
4	7	8	1	0.8750	8.9	5.50
5	9	10	1	0.7230	12.9	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H(Ta/Pa)}$ (y-axis)
1.0031	0.6975	1.4195	0.9956	0.6924	0.8823
0.9989	0.9727	2.0075	0.9915	0.9655	1.2477
0.9968	1.0858	2.2444	0.9894	1.0778	1.3950
0.9956	1.1378	2.3539	0.9882	1.1294	1.4631
0.9903	1.3697	2.8390	0.9829	1.3595	1.7645
QSTD	**m=**	**2.11196**	**QA**	**m=**	**1.32248**
	b=	**-0.05043**		**b=**	**-0.03134**
	r=	**0.99998**		**r=**	**0.99998**

Calculations

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

For subsequent flow rate calculations:

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

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

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

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

RECALIBRATION

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

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

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

Certificate of Calibration - Wind Monitoring Station

Description: M-A3 - S.K.H Tsoi Kung Po Secondary School

Model No.: C-OC-9200-wind

Serial No.: OC20210316224101

Equipment No.: A-06-03

Date of Calibration 22-Dec-2023

Next Due Date 21-Jun-2024

1. Performance check of Wind Speed

Wind Speed, m/s		Difference D (m/s)
Wind Speed Reading (V1)	Anemometer Value (V2)	D = V1 – V2
0.0	0.0	0.0
1.8	1.8	0.0
2.5	2.6	-0.1
4.0	3.9	0.1

2. Performance check of Wind Direction

Wind Direction (^{o})		Difference D (^{o})
Wind Direction Reading (W1)	Marine Compass Value (W1)	D = W1 - W2
0	0	0.0
90	90	0.0
180	180	0.0
270	270	0.0

Test Specification:

1. Performance Wind Speed Test - The wind meter was on-site calibrated against the anemometer

2. Performance Wind Direction Test - The wind meter was on-site calibrated against the marine compass at four direction

Calibrated by: _____ Wong Shing Kwai

Approved by: _____ Henry Leung

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00370 Issue Date : 02 May 2023
Application No. : HP00242

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Integrating Sound Level Meter.

Equipment No.: : SN-01-01

Manufacturer: : SVANTEK

Other information :

Model No.	SVAN 979
Serial No.	27189
Microphone No.	25202

Date Received : 02 May 2023

Test Period : 02 May 2023 to 02 May 2023

Test Requested : Performance checking for Sound Level Meter

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

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00370 Issue Date : 02 May 2023
Application No. : HP00242

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	93.9	- 0.1	± 1.5
114.0	114.0	± 0.0	± 1.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00430 Issue Date : 08 Sep 2023
Application No. : HP00304

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Integrating Sound Level Meter.

Equipment No.: : N-12-02

Manufacturer: : BSWA Technology

Other information :

Model No.	BSWA 308
Serial No.	570187
Microphone No.	590079

Date Received : 06 Sep 2023

Test Period : 07 Sep 2023 to 07 Sep 2023

Test Requested : Performance checking for Sound Level Meter

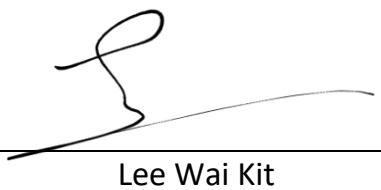
Test Method : The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED



Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00430 Issue Date : 08 Sep 2023
Application No. : HP00304

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.2	+ 0.2	± 1.5
114.0	114.2	+ 0.2	± 1.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00431 Issue Date : 08 Sep 2023
Application No. : HP00305

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Integrating Sound Level Meter.

Equipment No.: : N-12-06

Manufacturer: : BSWA Technology

Other information :

Model No.	BSWA 308
Serial No.	580156
Microphone No.	580804

Date Received : 06 Sep 2023

Test Period : 07 Sep 2023 to 07 Sep 2023

Test Requested : Performance checking for Sound Level Meter

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

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00431 Issue Date : 08 Sep 2023
Application No. : HP00305

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.1	+ 0.1	± 1.5
114.0	114.1	+ 0.1	± 1.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00380 Issue Date : 10 May 2023
Application No. : HP00252

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Sound Level Calibrator.

Equipment No.: : N-13-03

Manufacturer: : SOUNDTEK

Other information :

Model No.	ST-120
Serial No.	181001637

Date Received : 09 May 2023

Test Period : 09 May 2023 to 09 May 2023

Test Requested : Performance checking for Sound Level Calibrator

Test Method : The Sound Level Meter and Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00380 Issue Date : 10 May 2023
Application No. : HP00252

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Description	Sound Meter
Manufacturer	BSWA Technology
Model No.	BSWA 308
Serial No.	570183
Microphone No.	570605
Equipment No.	N-12-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.1	+ 0.1	± 0.3
114.0	114.2	+ 0.2	± 0.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00389 Issue Date : 20 Jul 2023
Application No. : HP00262

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Sound Level Calibrator.

Equipment No.: : N-16-01

Manufacturer: : Hangzhou Aihua Instruments Co., Ltd.

Other information :

Model No.	AWA6021A
Serial No.	1023253

Date Received : 18 Jul 2023

Test Period : 19 Jul 2023 to 19 Jul 2023

Test Requested : Performance checking for Sound Level Calibrator

Test Method : The Sound Level Meter and Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00389 Issue Date : 20 Jul 2023
Application No. : HP00262

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Description	Sound Meter
Manufacturer	BSWA Technology
Model No.	BSWA 308
Serial No.	570183
Microphone No.	570605
Equipment No.	N-12-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.2	+ 0.2	± 0.3
114.0	114.2	+ 0.2	± 0.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00406 Issue Date : 10 Aug 2023
Application No. : HP00284

Certificate of Calibration

Applicant : Cinotech Consultants Limited
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Sample Description : Submitted equipment stated to be Sound Level Calibrator.

Equipment No.: : N-16-02

Manufacturer: : Hangzhou Aihua Instruments Co., Ltd.

Other information :

Model No.	AWA6021A
Serial No.	1023064

Date Received : 07 Aug 2023

Test Period : 09 Aug 2023 to 09 Aug 2023

Test Requested : Performance checking for Sound Level Calibrator

Test Method : The Sound Level Meter and Calibrator has been calibrated in accordance with the documented procedures and using standard and instrument which are recommended by the manufacturer, or equivalent.

Test conditions : Room Temperature: 22-25 degree Celsius
Relative Humidity: 35-70%

Test Result : Refer to the test result(s) on page 2.

Remark : 1. Information of the sample description provided by the Applicant.
2. The result(s) relate only to the items tested or calibrated.

For and on behalf of
HIGH PRECISION CHEMICAL TESTING LIMITED

Lee Wai Kit
Laboratory Manager

High Precision Chemical Testing Ltd.
Rm 1904, Technology Park
18 On Lai Street, Shatin
NT, Hong Kong
Tel: +852 3841 4388 Website: https://www.hpct.com.hk

Report No. : 00406 Issue Date : 10 Aug 2023
Application No. : HP00284

Certificate of Calibration

Measuring equipment :

Description	Sound Calibrator
Manufacturer	Brüel & Kjær
Model No.	TYPE 4231
Serial No.	2326353
Equipment No.	N-02-01

Description	Sound Meter
Manufacturer	BSWA Technology
Model No.	BSWA 308
Serial No.	570183
Microphone No.	570605
Equipment No.	N-12-01

Test Result :

Reference value, dB	Indication value, dB	Deviation, dB	Allowed deviation, dB
94.0	94.3	+ 0.3	± 0.3
114.0	114.4	+ 0.4	± 0.5

Note : 1. "Instrument Readings" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.
2. The indication value was obtained from the average of ten replicated measurement.

- End of report -

APPENDIX C
WEATHER INFORMATION

February 2024			
Date	**Mean Air Temperature (°C)[1]**	**Mean Relative Humidity (%)[2]**	**Precipitation (mm)[3]**
1-Feb-24	21.1	92	0.2
2-Feb-24	21.7	88	Trace
3-Feb-24	19.6	85	Trace
4-Feb-24	19.8	92	Trace
5-Feb-24	20.4	86	Trace
6-Feb-24	19.1	86	0.6
7-Feb-24	16.8	90	Trace
8-Feb-24	13.0	84	2.2
9-Feb-24	12.7	77	0.6
10-Feb-24	14.4	72	0.5
11-Feb-24	17.4	60	0.0
12-Feb-24	18.1	55	0.0
13-Feb-24	19.2	71	0.0
14-Feb-24	21.0	78	0.0
15-Feb-24	22.3	70	0.0
16-Feb-24	20.4	77	Trace
17-Feb-24	19.5	82	Trace
18-Feb-24	21.6	87	0.0
19-Feb-24	22.7	88	0.0
20-Feb-24	23.9	87	0.0
21-Feb-24	24.5	82	0.0
22-Feb-24	23.6	87	0.0
23-Feb-24	20.4	85	Trace
24-Feb-24	18.8	73	Trace
25-Feb-24	17.1	71	0.0
26-Feb-24	18.2	76	Trace
27-Feb-24	17.6	73	Trace
28-Feb-24	18.3	85	Trace
29-Feb-24	18.7	85	Trace

(Reporting Month: Feb 2024)

Remarks:

* Meterological data from Hong Kong Observatory Manned Weather Station was adopted.

Source - Hong Kong Observatory

[1-3]Retrieved from Manned Weather Station (Hong Kong Observatory) (22°18'07" N, 114°10'27" E)

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
1 Feb 2024	12:00 AM	SSW	0.2
1 Feb 2024	1:00 AM	SSW	0.6
1 Feb 2024	2:00 AM	SW	0.7
1 Feb 2024	3:00 AM	SW	0.7
1 Feb 2024	4:00 AM	SSW	1.0
1 Feb 2024	5:00 AM	S	0.1
1 Feb 2024	6:00 AM	SW	0.3
1 Feb 2024	7:00 AM	SSW	0.2
1 Feb 2024	8:00 AM	SSE	0.5
1 Feb 2024	9:00 AM	S	1.0
1 Feb 2024	10:00 AM	SSW	0.6
1 Feb 2024	11:00 AM	SSE	0.5
1 Feb 2024	12:00 PM	SSW	0.4
1 Feb 2024	1:00 PM	SSW	0.9
1 Feb 2024	2:00 PM	SSW	0.4
1 Feb 2024	3:00 PM	SSW	0.6
1 Feb 2024	4:00 PM	S	0.2
1 Feb 2024	5:00 PM	SW	0.9
1 Feb 2024	6:00 PM	S	1.0
1 Feb 2024	7:00 PM	S	0.5
1 Feb 2024	8:00 PM	SSE	0.6
1 Feb 2024	9:00 PM	S	0.8
1 Feb 2024	10:00 PM	SSW	0.0
1 Feb 2024	11:00 PM	SSE	0.6
2 Feb 2024	12:00 AM	SSE	0.5
2 Feb 2024	1:00 AM	S	0.9
2 Feb 2024	2:00 AM	S	0.1
2 Feb 2024	3:00 AM	S	0.7
2 Feb 2024	4:00 AM	S	1.0
2 Feb 2024	5:00 AM	S	0.3
2 Feb 2024	6:00 AM	SSW	0.9
2 Feb 2024	7:00 AM	SSE	1.0
2 Feb 2024	8:00 AM	S	0.3
2 Feb 2024	9:00 AM	S	0.9
2 Feb 2024	10:00 AM	S	0.0
2 Feb 2024	11:00 AM	SSE	0.7
2 Feb 2024	12:00 PM	SSW	0.1
2 Feb 2024	1:00 PM	S	0.0
2 Feb 2024	2:00 PM	SSE	0.4
2 Feb 2024	3:00 PM	S	1.0
2 Feb 2024	4:00 PM	SW	0.5

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
2 Feb 2024	5:00 PM	SW	1.0
2 Feb 2024	6:00 PM	SSW	0.0
2 Feb 2024	7:00 PM	SW	0.6
2 Feb 2024	8:00 PM	SSE	0.1
2 Feb 2024	9:00 PM	SW	0.2
2 Feb 2024	10:00 PM	SW	0.5
2 Feb 2024	11:00 PM	S	0.3
3 Feb 2024	12:00 AM	WSW	0.7
3 Feb 2024	1:00 AM	WSW	0.4
3 Feb 2024	2:00 AM	SSW	0.1
3 Feb 2024	3:00 AM	ESE	0.2
3 Feb 2024	4:00 AM	SSE	0.7
3 Feb 2024	5:00 AM	SE	0.3
3 Feb 2024	6:00 AM	ESE	0.2
3 Feb 2024	7:00 AM	SE	0.2
3 Feb 2024	8:00 AM	SE	0.4
3 Feb 2024	9:00 AM	SSE	0.6
3 Feb 2024	10:00 AM	SE	0.0
3 Feb 2024	11:00 AM	S	0.6
3 Feb 2024	12:00 PM	SSE	0.5
3 Feb 2024	1:00 PM	SE	0.9
3 Feb 2024	2:00 PM	ESE	0.7
3 Feb 2024	3:00 PM	S	0.0
3 Feb 2024	4:00 PM	ESE	0.5
3 Feb 2024	5:00 PM	SE	0.8
3 Feb 2024	6:00 PM	SSE	0.1
3 Feb 2024	7:00 PM	SSE	1.0
3 Feb 2024	8:00 PM	ESE	0.2
3 Feb 2024	9:00 PM	S	0.5
3 Feb 2024	10:00 PM	SSE	0.2
3 Feb 2024	11:00 PM	ESE	0.1
4 Feb 2024	12:00 AM	ESE	0.6
4 Feb 2024	1:00 AM	ESE	0.8
4 Feb 2024	2:00 AM	SSE	0.6
4 Feb 2024	3:00 AM	S	0.9
4 Feb 2024	4:00 AM	SE	0.2
4 Feb 2024	5:00 AM	SE	0.8
4 Feb 2024	6:00 AM	S	0.4
4 Feb 2024	7:00 AM	SSW	0.4
4 Feb 2024	8:00 AM	SSW	0.0
4 Feb 2024	9:00 AM	SE	0.1

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
4 Feb 2024	10:00 AM	SSE	0.1
4 Feb 2024	11:00 AM	S	0.2
4 Feb 2024	12:00 PM	S	0.0
4 Feb 2024	1:00 PM	SSW	0.4
4 Feb 2024	2:00 PM	S	0.0
4 Feb 2024	3:00 PM	SW	0.5
4 Feb 2024	4:00 PM	SSW	0.7
4 Feb 2024	5:00 PM	S	0.9
4 Feb 2024	6:00 PM	SSW	0.8
4 Feb 2024	7:00 PM	SSW	0.0
4 Feb 2024	8:00 PM	SW	0.7
4 Feb 2024	9:00 PM	SSE	1.0
4 Feb 2024	10:00 PM	SSE	0.4
4 Feb 2024	11:00 PM	W	0.5
5 Feb 2024	12:00 AM	SSW	0.6
5 Feb 2024	1:00 AM	SSW	0.3
5 Feb 2024	2:00 AM	SW	0.8
5 Feb 2024	3:00 AM	SSW	0.0
5 Feb 2024	4:00 AM	S	0.8
5 Feb 2024	5:00 AM	S	1.0
5 Feb 2024	6:00 AM	SSW	0.8
5 Feb 2024	7:00 AM	SSW	0.1
5 Feb 2024	8:00 AM	SSE	0.2
5 Feb 2024	9:00 AM	SSW	0.6
5 Feb 2024	10:00 AM	SSE	0.0
5 Feb 2024	11:00 AM	S	0.6
5 Feb 2024	12:00 PM	SW	0.2
5 Feb 2024	1:00 PM	SSW	0.6
5 Feb 2024	2:00 PM	SSW	0.2
5 Feb 2024	3:00 PM	S	0.6
5 Feb 2024	4:00 PM	SSE	0.8
5 Feb 2024	5:00 PM	SW	0.4
5 Feb 2024	6:00 PM	SW	1.0
5 Feb 2024	7:00 PM	SSW	0.7
5 Feb 2024	8:00 PM	SSW	0.9
5 Feb 2024	9:00 PM	S	0.4
5 Feb 2024	10:00 PM	SSW	0.7
5 Feb 2024	11:00 PM	SSE	0.0
6 Feb 2024	12:00 AM	NE	0.0
6 Feb 2024	1:00 AM	W	0.7
6 Feb 2024	2:00 AM	S	0.9

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
6 Feb 2024	3:00 AM	WSW	1.0
6 Feb 2024	4:00 AM	SW	0.3
6 Feb 2024	5:00 AM	SSW	0.8
6 Feb 2024	6:00 AM	S	0.6
6 Feb 2024	7:00 AM	SW	0.6
6 Feb 2024	8:00 AM	S	0.0
6 Feb 2024	9:00 AM	SW	0.2
6 Feb 2024	10:00 AM	SSE	0.5
6 Feb 2024	11:00 AM	SSW	0.1
6 Feb 2024	12:00 PM	S	0.0
6 Feb 2024	1:00 PM	S	0.4
6 Feb 2024	2:00 PM	SW	1.0
6 Feb 2024	3:00 PM	SSW	0.2
6 Feb 2024	4:00 PM	S	0.1
6 Feb 2024	5:00 PM	SSW	0.8
6 Feb 2024	6:00 PM	SE	0.8
6 Feb 2024	7:00 PM	SW	0.1
6 Feb 2024	8:00 PM	S	0.8
6 Feb 2024	9:00 PM	SW	0.8
6 Feb 2024	10:00 PM	WSW	0.0
6 Feb 2024	11:00 PM	SW	0.9
7 Feb 2024	12:00 AM	SW	0.8
7 Feb 2024	1:00 AM	SSW	0.6
7 Feb 2024	2:00 AM	SW	0.9
7 Feb 2024	3:00 AM	S	0.0
7 Feb 2024	4:00 AM	SW	0.8
7 Feb 2024	5:00 AM	SSE	1.0
7 Feb 2024	6:00 AM	WSW	0.1
7 Feb 2024	7:00 AM	SSW	0.0
7 Feb 2024	8:00 AM	SSE	0.9
7 Feb 2024	9:00 AM	S	1.0
7 Feb 2024	10:00 AM	S	0.3
7 Feb 2024	11:00 AM	SSE	0.8
7 Feb 2024	12:00 PM	SSW	0.9
7 Feb 2024	1:00 PM	SSE	0.7
7 Feb 2024	2:00 PM	SW	0.7
7 Feb 2024	3:00 PM	S	0.3
7 Feb 2024	4:00 PM	SSE	0.4
7 Feb 2024	5:00 PM	S	1.0
7 Feb 2024	6:00 PM	SSW	0.2
7 Feb 2024	7:00 PM	SSE	0.8

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
7 Feb 2024	8:00 PM	SSE	1.0
7 Feb 2024	9:00 PM	SW	0.1
7 Feb 2024	10:00 PM	SW	0.7
7 Feb 2024	11:00 PM	SSE	0.6
8 Feb 2024	12:00 AM	S	0.4
8 Feb 2024	1:00 AM	S	0.3
8 Feb 2024	2:00 AM	SSW	0.9
8 Feb 2024	3:00 AM	SW	0.0
8 Feb 2024	4:00 AM	SSE	0.6
8 Feb 2024	5:00 AM	SSW	0.7
8 Feb 2024	6:00 AM	S	0.5
8 Feb 2024	7:00 AM	SSW	1.0
8 Feb 2024	8:00 AM	SSE	0.8
8 Feb 2024	9:00 AM	SSE	1.0
8 Feb 2024	10:00 AM	SE	1.0
8 Feb 2024	11:00 AM	SSE	0.9
8 Feb 2024	12:00 PM	SSW	0.8
8 Feb 2024	1:00 PM	SSE	1.0
8 Feb 2024	2:00 PM	SSW	0.5
8 Feb 2024	3:00 PM	SSW	0.1
8 Feb 2024	4:00 PM	SSE	0.8
8 Feb 2024	5:00 PM	SSE	0.1
8 Feb 2024	6:00 PM	S	0.5
8 Feb 2024	7:00 PM	S	0.9
8 Feb 2024	8:00 PM	SSW	0.0
8 Feb 2024	9:00 PM	SSE	0.8
8 Feb 2024	10:00 PM	SE	0.0
8 Feb 2024	11:00 PM	S	0.9
9 Feb 2024	12:00 AM	SSW	1.0
9 Feb 2024	1:00 AM	SE	0.2
9 Feb 2024	2:00 AM	SSW	0.5
9 Feb 2024	3:00 AM	W	0.2
9 Feb 2024	4:00 AM	S	0.6
9 Feb 2024	5:00 AM	SSW	0.5
9 Feb 2024	6:00 AM	WSW	0.1
9 Feb 2024	7:00 AM	SW	0.4
9 Feb 2024	8:00 AM	S	0.6
9 Feb 2024	9:00 AM	S	0.3
9 Feb 2024	10:00 AM	SSE	0.4
9 Feb 2024	11:00 AM	SSW	0.3
9 Feb 2024	12:00 PM	SW	0.0

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
9 Feb 2024	1:00 PM	S	0.7
9 Feb 2024	2:00 PM	S	0.0
9 Feb 2024	3:00 PM	SSE	0.5
9 Feb 2024	4:00 PM	SSW	0.6
9 Feb 2024	5:00 PM	SE	0.1
9 Feb 2024	6:00 PM	S	0.3
9 Feb 2024	7:00 PM	S	0.8
9 Feb 2024	8:00 PM	S	0.5
9 Feb 2024	9:00 PM	WSW	0.1
9 Feb 2024	10:00 PM	S	0.9
9 Feb 2024	11:00 PM	S	0.3
10 Feb 2024	12:00 AM	SSE	0.6
10 Feb 2024	1:00 AM	SW	0.2
10 Feb 2024	2:00 AM	SSW	0.3
10 Feb 2024	3:00 AM	SE	0.1
10 Feb 2024	4:00 AM	ESE	0.3
10 Feb 2024	5:00 AM	SE	0.7
10 Feb 2024	6:00 AM	S	0.4
10 Feb 2024	7:00 AM	SSE	0.8
10 Feb 2024	8:00 AM	SE	0.1
10 Feb 2024	9:00 AM	SE	0.6
10 Feb 2024	10:00 AM	ESE	0.4
10 Feb 2024	11:00 AM	SSE	0.8
10 Feb 2024	12:00 PM	SSE	1.0
10 Feb 2024	1:00 PM	SSE	0.9
10 Feb 2024	2:00 PM	SSE	0.4
10 Feb 2024	3:00 PM	ESE	0.4
10 Feb 2024	4:00 PM	S	0.9
10 Feb 2024	5:00 PM	SE	0.6
10 Feb 2024	6:00 PM	ESE	1.0
10 Feb 2024	7:00 PM	ESE	0.7
10 Feb 2024	8:00 PM	SSE	0.6
10 Feb 2024	9:00 PM	SSE	0.1
10 Feb 2024	10:00 PM	SSE	0.4
10 Feb 2024	11:00 PM	ESE	0.1
11 Feb 2024	12:00 AM	SE	0.7
11 Feb 2024	1:00 AM	SSE	0.9
11 Feb 2024	2:00 AM	ESE	0.8
11 Feb 2024	3:00 AM	S	0.3
11 Feb 2024	4:00 AM	SSE	0.3
11 Feb 2024	5:00 AM	S	0.3

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
11 Feb 2024	6:00 AM	S	0.8
11 Feb 2024	7:00 AM	S	0.0
11 Feb 2024	8:00 AM	SSW	0.0
11 Feb 2024	9:00 AM	S	0.5
11 Feb 2024	10:00 AM	SSW	0.9
11 Feb 2024	11:00 AM	SW	0.6
11 Feb 2024	12:00 PM	SW	0.1
11 Feb 2024	1:00 PM	SSW	0.2
11 Feb 2024	2:00 PM	SW	0.1
11 Feb 2024	3:00 PM	SSW	0.9
11 Feb 2024	4:00 PM	SSW	0.2
11 Feb 2024	5:00 PM	S	0.9
11 Feb 2024	6:00 PM	SSE	0.3
11 Feb 2024	7:00 PM	S	0.1
11 Feb 2024	8:00 PM	SSW	0.2
11 Feb 2024	9:00 PM	SSW	1.0
11 Feb 2024	10:00 PM	SSE	0.8
11 Feb 2024	11:00 PM	SW	0.1
12 Feb 2024	12:00 AM	S	0.1
12 Feb 2024	1:00 AM	SSW	0.5
12 Feb 2024	2:00 AM	SW	0.3
12 Feb 2024	3:00 AM	SSW	0.6
12 Feb 2024	4:00 AM	SSW	0.1
12 Feb 2024	5:00 AM	S	0.8
12 Feb 2024	6:00 AM	SSW	0.6
12 Feb 2024	7:00 AM	SSW	0.8
12 Feb 2024	8:00 AM	SE	0.6
12 Feb 2024	9:00 AM	SW	0.3
12 Feb 2024	10:00 AM	SSW	0.5
12 Feb 2024	11:00 AM	SSW	0.5
12 Feb 2024	12:00 PM	SSW	0.3
12 Feb 2024	1:00 PM	S	0.3
12 Feb 2024	2:00 PM	SSW	0.1
12 Feb 2024	3:00 PM	S	0.6
12 Feb 2024	4:00 PM	SSW	1.0
12 Feb 2024	5:00 PM	S	0.0
12 Feb 2024	6:00 PM	S	0.0
12 Feb 2024	7:00 PM	SW	0.8
12 Feb 2024	8:00 PM	SSE	0.9
12 Feb 2024	9:00 PM	SSW	0.9
12 Feb 2024	10:00 PM	SW	0.5

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
12 Feb 2024	11:00 PM	S	0.6
13 Feb 2024	12:00 AM	SW	0.0
13 Feb 2024	1:00 AM	S	0.8
13 Feb 2024	2:00 AM	SW	0.1
13 Feb 2024	3:00 AM	SSE	0.0
13 Feb 2024	4:00 AM	S	0.3
13 Feb 2024	5:00 AM	S	1.0
13 Feb 2024	6:00 AM	WSW	0.2
13 Feb 2024	7:00 AM	SSE	0.7
13 Feb 2024	8:00 AM	S	0.9
13 Feb 2024	9:00 AM	SSE	0.1
13 Feb 2024	10:00 AM	WSW	0.0
13 Feb 2024	11:00 AM	SSE	0.3
13 Feb 2024	12:00 PM	SW	0.3
13 Feb 2024	1:00 PM	SSW	0.4
13 Feb 2024	2:00 PM	S	0.1
13 Feb 2024	3:00 PM	SSW	0.8
13 Feb 2024	4:00 PM	SSW	1.0
13 Feb 2024	5:00 PM	SSW	0.8
13 Feb 2024	6:00 PM	SSW	0.5
13 Feb 2024	7:00 PM	SW	0.7
13 Feb 2024	8:00 PM	SSW	0.9
13 Feb 2024	9:00 PM	SSE	0.5
13 Feb 2024	10:00 PM	SE	0.2
13 Feb 2024	11:00 PM	SSE	0.1
14 Feb 2024	12:00 AM	SSE	0.6
14 Feb 2024	1:00 AM	S	0.9
14 Feb 2024	2:00 AM	SSW	0.1
14 Feb 2024	3:00 AM	SSE	0.2
14 Feb 2024	4:00 AM	S	0.4
14 Feb 2024	5:00 AM	SSW	0.8
14 Feb 2024	6:00 AM	SSE	0.2
14 Feb 2024	7:00 AM	S	0.6
14 Feb 2024	8:00 AM	SSE	0.6
14 Feb 2024	9:00 AM	SSE	0.2
14 Feb 2024	10:00 AM	S	0.8
14 Feb 2024	11:00 AM	WSW	0.3
14 Feb 2024	12:00 PM	SSW	0.6
14 Feb 2024	1:00 PM	S	0.6
14 Feb 2024	2:00 PM	S	0.9
14 Feb 2024	3:00 PM	SSW	0.0

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
14 Feb 2024	4:00 PM	SW	0.7
14 Feb 2024	5:00 PM	SSW	0.7
14 Feb 2024	6:00 PM	SSW	0.4
14 Feb 2024	7:00 PM	SSW	0.2
14 Feb 2024	8:00 PM	WSW	0.3
14 Feb 2024	9:00 PM	WSW	0.4
14 Feb 2024	10:00 PM	S	0.4
14 Feb 2024	11:00 PM	SSW	0.0
15 Feb 2024	12:00 AM	NW	0.5
15 Feb 2024	1:00 AM	ENE	0.2
15 Feb 2024	2:00 AM	WSW	0.1
15 Feb 2024	3:00 AM	S	0.4
15 Feb 2024	4:00 AM	NNW	0.4
15 Feb 2024	5:00 AM	NW	1.0
15 Feb 2024	6:00 AM	SW	0.9
15 Feb 2024	7:00 AM	SW	0.0
15 Feb 2024	8:00 AM	S	0.6
15 Feb 2024	9:00 AM	S	0.9
15 Feb 2024	10:00 AM	S	0.7
15 Feb 2024	11:00 AM	SE	0.6
15 Feb 2024	12:00 PM	S	0.0
15 Feb 2024	1:00 PM	SSW	0.4
15 Feb 2024	2:00 PM	SW	0.8
15 Feb 2024	3:00 PM	SSW	0.4
15 Feb 2024	4:00 PM	SSW	0.5
15 Feb 2024	5:00 PM	SSW	0.6
15 Feb 2024	6:00 PM	S	0.8
15 Feb 2024	7:00 PM	S	1.0
15 Feb 2024	8:00 PM	S	1.0
15 Feb 2024	9:00 PM	SW	0.3
15 Feb 2024	10:00 PM	SSW	0.5
15 Feb 2024	11:00 PM	S	0.3
16 Feb 2024	12:00 AM	S	0.2
16 Feb 2024	1:00 AM	SSW	1.0
16 Feb 2024	2:00 AM	S	0.1
16 Feb 2024	3:00 AM	S	0.5
16 Feb 2024	4:00 AM	SSE	0.3
16 Feb 2024	5:00 AM	SE	0.1
16 Feb 2024	6:00 AM	SE	0.4
16 Feb 2024	7:00 AM	SSE	1.0
16 Feb 2024	8:00 AM	SSE	0.6

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
16 Feb 2024	9:00 AM	SSW	0.7
16 Feb 2024	10:00 AM	SSE	0.8
16 Feb 2024	11:00 AM	SE	0.3
16 Feb 2024	12:00 PM	S	0.7
16 Feb 2024	1:00 PM	SSW	0.5
16 Feb 2024	2:00 PM	S	0.4
16 Feb 2024	3:00 PM	S	0.4
16 Feb 2024	4:00 PM	SSW	0.9
16 Feb 2024	5:00 PM	SSW	0.6
16 Feb 2024	6:00 PM	S	0.3
16 Feb 2024	7:00 PM	SSE	0.5
16 Feb 2024	8:00 PM	S	0.5
16 Feb 2024	9:00 PM	SSW	0.6
16 Feb 2024	10:00 PM	SSE	1.0
16 Feb 2024	11:00 PM	SSE	0.9
17 Feb 2024	12:00 AM	SW	0.8
17 Feb 2024	1:00 AM	SSW	0.0
17 Feb 2024	2:00 AM	S	0.6
17 Feb 2024	3:00 AM	SSE	0.7
17 Feb 2024	4:00 AM	SE	0.6
17 Feb 2024	5:00 AM	ESE	0.5
17 Feb 2024	6:00 AM	SSE	0.9
17 Feb 2024	7:00 AM	SE	0.9
17 Feb 2024	8:00 AM	SSW	0.5
17 Feb 2024	9:00 AM	SSW	0.2
17 Feb 2024	10:00 AM	SSW	0.9
17 Feb 2024	11:00 AM	S	0.5
17 Feb 2024	12:00 PM	S	0.3
17 Feb 2024	1:00 PM	SW	0.6
17 Feb 2024	2:00 PM	SSW	0.3
17 Feb 2024	3:00 PM	S	0.2
17 Feb 2024	4:00 PM	SSW	0.1
17 Feb 2024	5:00 PM	S	0.1
17 Feb 2024	6:00 PM	SSW	0.7
17 Feb 2024	7:00 PM	SSW	1.0
17 Feb 2024	8:00 PM	SSW	0.5
17 Feb 2024	9:00 PM	SSE	0.5
17 Feb 2024	10:00 PM	SW	0.3
17 Feb 2024	11:00 PM	SW	0.5
18 Feb 2024	12:00 AM	WSW	0.7
18 Feb 2024	1:00 AM	SW	0.8

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
18 Feb 2024	2:00 AM	SSW	1.0
18 Feb 2024	3:00 AM	SSE	0.8
18 Feb 2024	4:00 AM	SSW	0.8
18 Feb 2024	5:00 AM	S	1.0
18 Feb 2024	6:00 AM	SSW	0.7
18 Feb 2024	7:00 AM	S	0.0
18 Feb 2024	8:00 AM	SSW	0.6
18 Feb 2024	9:00 AM	S	0.6
18 Feb 2024	10:00 AM	SSW	0.8
18 Feb 2024	11:00 AM	S	0.8
18 Feb 2024	12:00 PM	S	0.8
18 Feb 2024	1:00 PM	SSW	0.9
18 Feb 2024	2:00 PM	S	0.0
18 Feb 2024	3:00 PM	SSW	0.4
18 Feb 2024	4:00 PM	SSE	0.1
18 Feb 2024	5:00 PM	SSE	0.0
18 Feb 2024	6:00 PM	SSW	0.9
18 Feb 2024	7:00 PM	SSE	1.0
18 Feb 2024	8:00 PM	S	0.1
18 Feb 2024	9:00 PM	SSW	0.2
18 Feb 2024	10:00 PM	SSW	0.3
18 Feb 2024	11:00 PM	SW	0.5
19 Feb 2024	12:00 AM	WSW	0.4
19 Feb 2024	1:00 AM	WSW	0.5
19 Feb 2024	2:00 AM	SW	0.8
19 Feb 2024	3:00 AM	W	0.9
19 Feb 2024	4:00 AM	SSW	0.6
19 Feb 2024	5:00 AM	SW	0.4
19 Feb 2024	6:00 AM	SW	0.1
19 Feb 2024	7:00 AM	SW	0.0
19 Feb 2024	8:00 AM	S	0.8
19 Feb 2024	9:00 AM	S	0.0
19 Feb 2024	10:00 AM	S	0.2
19 Feb 2024	11:00 AM	S	0.4
19 Feb 2024	12:00 PM	S	0.3
19 Feb 2024	1:00 PM	S	0.4
19 Feb 2024	2:00 PM	SW	0.4
19 Feb 2024	3:00 PM	S	0.0
19 Feb 2024	4:00 PM	SSE	0.0
19 Feb 2024	5:00 PM	SSW	0.2
19 Feb 2024	6:00 PM	SSW	0.6

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
19 Feb 2024	7:00 PM	SSE	0.1
19 Feb 2024	8:00 PM	SSW	0.0
19 Feb 2024	9:00 PM	SSW	0.5
19 Feb 2024	10:00 PM	SW	1.0
19 Feb 2024	11:00 PM	S	0.9
20 Feb 2024	12:00 AM	SSW	0.7
20 Feb 2024	1:00 AM	S	0.6
20 Feb 2024	2:00 AM	S	0.4
20 Feb 2024	3:00 AM	SW	0.6
20 Feb 2024	4:00 AM	W	0.8
20 Feb 2024	5:00 AM	S	0.2
20 Feb 2024	6:00 AM	SSW	0.6
20 Feb 2024	7:00 AM	S	0.1
20 Feb 2024	8:00 AM	E	0.9
20 Feb 2024	9:00 AM	SSW	0.1
20 Feb 2024	10:00 AM	S	0.4
20 Feb 2024	11:00 AM	SSE	0.6
20 Feb 2024	12:00 PM	S	0.6
20 Feb 2024	1:00 PM	S	0.3
20 Feb 2024	2:00 PM	SW	0.9
20 Feb 2024	3:00 PM	SSW	0.1
20 Feb 2024	4:00 PM	S	0.6
20 Feb 2024	5:00 PM	S	0.0
20 Feb 2024	6:00 PM	SSE	0.4
20 Feb 2024	7:00 PM	SSE	0.6
20 Feb 2024	8:00 PM	SSE	0.0
20 Feb 2024	9:00 PM	E	0.1
20 Feb 2024	10:00 PM	E	0.2
20 Feb 2024	11:00 PM	SE	0.7
21 Feb 2024	12:00 AM	E	0.1
21 Feb 2024	1:00 AM	SE	0.9
21 Feb 2024	2:00 AM	E	0.1
21 Feb 2024	3:00 AM	SE	0.8
21 Feb 2024	4:00 AM	ENE	0.7
21 Feb 2024	5:00 AM	SSE	0.9
21 Feb 2024	6:00 AM	ESE	1.0
21 Feb 2024	7:00 AM	SE	0.3
21 Feb 2024	8:00 AM	S	0.2
21 Feb 2024	9:00 AM	SSE	0.8
21 Feb 2024	10:00 AM	S	0.6
21 Feb 2024	11:00 AM	SSE	0.1

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
21 Feb 2024	12:00 PM	SE	1.0
21 Feb 2024	1:00 PM	S	0.2
21 Feb 2024	2:00 PM	SSE	0.5
21 Feb 2024	3:00 PM	SE	0.4
21 Feb 2024	4:00 PM	SSE	0.8
21 Feb 2024	5:00 PM	SSW	0.5
21 Feb 2024	6:00 PM	SSW	0.8
21 Feb 2024	7:00 PM	SW	0.6
21 Feb 2024	8:00 PM	SSE	0.0
21 Feb 2024	9:00 PM	SW	0.6
21 Feb 2024	10:00 PM	S	0.4
21 Feb 2024	11:00 PM	S	0.0
22 Feb 2024	12:00 AM	SSE	1.0
22 Feb 2024	1:00 AM	SSW	0.9
22 Feb 2024	2:00 AM	SSE	0.9
22 Feb 2024	3:00 AM	SSE	0.2
22 Feb 2024	4:00 AM	SSE	0.1
22 Feb 2024	5:00 AM	ESE	0.7
22 Feb 2024	6:00 AM	SSE	0.5
22 Feb 2024	7:00 AM	E	0.8
22 Feb 2024	8:00 AM	SSE	0.6
22 Feb 2024	9:00 AM	ESE	0.6
22 Feb 2024	10:00 AM	SSE	0.2
22 Feb 2024	11:00 AM	ESE	0.4
22 Feb 2024	12:00 PM	ESE	0.0
22 Feb 2024	1:00 PM	SE	0.7
22 Feb 2024	2:00 PM	ESE	0.0
22 Feb 2024	3:00 PM	ESE	0.9
22 Feb 2024	4:00 PM	SE	0.9
22 Feb 2024	5:00 PM	SSE	0.7
22 Feb 2024	6:00 PM	SSE	0.1
22 Feb 2024	7:00 PM	SE	0.4
22 Feb 2024	8:00 PM	SSE	0.9
22 Feb 2024	9:00 PM	SE	1.0
22 Feb 2024	10:00 PM	SE	0.6
22 Feb 2024	11:00 PM	S	1.0
23 Feb 2024	12:00 AM	SSE	0.4
23 Feb 2024	1:00 AM	SE	1.0
23 Feb 2024	2:00 AM	ESE	0.4
23 Feb 2024	3:00 AM	SSE	0.7
23 Feb 2024	4:00 AM	E	0.8

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
23 Feb 2024	5:00 AM	S	0.1
23 Feb 2024	6:00 AM	SE	0.6
23 Feb 2024	7:00 AM	SE	0.2
23 Feb 2024	8:00 AM	SE	0.6
23 Feb 2024	9:00 AM	ESE	0.9
23 Feb 2024	10:00 AM	ESE	0.1
23 Feb 2024	11:00 AM	ESE	0.7
23 Feb 2024	12:00 PM	ESE	0.3
23 Feb 2024	1:00 PM	SSE	0.6
23 Feb 2024	2:00 PM	SE	0.9
23 Feb 2024	3:00 PM	SSE	0.5
23 Feb 2024	4:00 PM	S	0.7
23 Feb 2024	5:00 PM	SE	1.0
23 Feb 2024	6:00 PM	ESE	0.9
23 Feb 2024	7:00 PM	SSE	0.3
23 Feb 2024	8:00 PM	SE	1.0
23 Feb 2024	9:00 PM	SSE	0.5
23 Feb 2024	10:00 PM	SE	0.9
23 Feb 2024	11:00 PM	SE	0.5
24 Feb 2024	12:00 AM	SSE	0.2
24 Feb 2024	1:00 AM	SSE	1.0
24 Feb 2024	2:00 AM	SE	0.1
24 Feb 2024	3:00 AM	SE	0.8
24 Feb 2024	4:00 AM	SE	0.2
24 Feb 2024	5:00 AM	SSE	0.0
24 Feb 2024	6:00 AM	SE	0.0
24 Feb 2024	7:00 AM	SSE	0.4
24 Feb 2024	8:00 AM	SE	0.0
24 Feb 2024	9:00 AM	ESE	0.3
24 Feb 2024	10:00 AM	SE	0.6
24 Feb 2024	11:00 AM	ESE	0.8
24 Feb 2024	12:00 PM	SSE	1.0
24 Feb 2024	1:00 PM	SSW	0.0
24 Feb 2024	2:00 PM	SE	0.5
24 Feb 2024	3:00 PM	SE	0.9
24 Feb 2024	4:00 PM	S	0.5
24 Feb 2024	5:00 PM	SSE	0.1
24 Feb 2024	6:00 PM	ESE	0.2
24 Feb 2024	7:00 PM	SE	0.9
24 Feb 2024	8:00 PM	SSE	0.1
24 Feb 2024	9:00 PM	SE	1.0

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
24 Feb 2024	10:00 PM	E	0.5
24 Feb 2024	11:00 PM	SE	0.4
25 Feb 2024	12:00 AM	E	0.0
25 Feb 2024	1:00 AM	ESE	1.0
25 Feb 2024	2:00 AM	ESE	0.4
25 Feb 2024	3:00 AM	ENE	0.8
25 Feb 2024	4:00 AM	ESE	0.3
25 Feb 2024	5:00 AM	E	0.8
25 Feb 2024	6:00 AM	E	0.4
25 Feb 2024	7:00 AM	SSE	1.0
25 Feb 2024	8:00 AM	ESE	0.2
25 Feb 2024	9:00 AM	ESE	0.8
25 Feb 2024	10:00 AM	ESE	0.4
25 Feb 2024	11:00 AM	E	0.2
25 Feb 2024	12:00 PM	SE	0.6
25 Feb 2024	1:00 PM	SSE	0.2
25 Feb 2024	2:00 PM	SSW	0.5
25 Feb 2024	3:00 PM	S	0.1
25 Feb 2024	4:00 PM	S	0.7
25 Feb 2024	5:00 PM	S	0.2
25 Feb 2024	6:00 PM	E	0.8
25 Feb 2024	7:00 PM	SE	0.4
25 Feb 2024	8:00 PM	S	0.7
25 Feb 2024	9:00 PM	SSE	0.9
25 Feb 2024	10:00 PM	SE	0.1
25 Feb 2024	11:00 PM	SE	0.7
26 Feb 2024	12:00 AM	S	0.8
26 Feb 2024	1:00 AM	SE	0.3
26 Feb 2024	2:00 AM	ESE	0.1
26 Feb 2024	3:00 AM	SE	0.2
26 Feb 2024	4:00 AM	SSE	0.4
26 Feb 2024	5:00 AM	WSW	0.1
26 Feb 2024	6:00 AM	S	0.1
26 Feb 2024	7:00 AM	S	0.1
26 Feb 2024	8:00 AM	SSW	0.5
26 Feb 2024	9:00 AM	SSE	0.2
26 Feb 2024	10:00 AM	S	0.3
26 Feb 2024	11:00 AM	S	0.3
26 Feb 2024	12:00 PM	SSE	0.0
26 Feb 2024	1:00 PM	SSE	0.9
26 Feb 2024	2:00 PM	SW	0.0

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
26 Feb 2024	3:00 PM	SW	0.0
26 Feb 2024	4:00 PM	SW	0.8
26 Feb 2024	5:00 PM	SW	0.5
26 Feb 2024	6:00 PM	SE	0.9
26 Feb 2024	7:00 PM	SE	1.0
26 Feb 2024	8:00 PM	SE	0.5
26 Feb 2024	9:00 PM	SSW	0.3
26 Feb 2024	10:00 PM	ESE	0.8
26 Feb 2024	11:00 PM	SE	0.0
27 Feb 2024	12:00 AM	SE	0.0
27 Feb 2024	1:00 AM	ESE	0.6
27 Feb 2024	2:00 AM	SE	0.1
27 Feb 2024	3:00 AM	SE	0.4
27 Feb 2024	4:00 AM	SE	0.4
27 Feb 2024	5:00 AM	SSE	0.8
27 Feb 2024	6:00 AM	SSE	0.1
27 Feb 2024	7:00 AM	SE	0.6
27 Feb 2024	8:00 AM	ESE	0.0
27 Feb 2024	9:00 AM	SSW	0.7
27 Feb 2024	10:00 AM	S	0.4
27 Feb 2024	11:00 AM	ESE	0.8
27 Feb 2024	12:00 PM	SSE	0.6
27 Feb 2024	1:00 PM	S	0.8
27 Feb 2024	2:00 PM	SSE	1.0
27 Feb 2024	3:00 PM	SSE	0.5
27 Feb 2024	4:00 PM	ESE	0.8
27 Feb 2024	5:00 PM	E	0.4
27 Feb 2024	6:00 PM	SSE	1.0
27 Feb 2024	7:00 PM	SE	0.6
27 Feb 2024	8:00 PM	SSE	0.1
27 Feb 2024	9:00 PM	E	0.1
27 Feb 2024	10:00 PM	ENE	1.0
27 Feb 2024	11:00 PM	SE	0.0
28 Feb 2024	12:00 AM	SSE	0.9
28 Feb 2024	1:00 AM	SE	0.6
28 Feb 2024	2:00 AM	SE	0.6
28 Feb 2024	3:00 AM	ESE	0.2
28 Feb 2024	4:00 AM	ESE	0.3
28 Feb 2024	5:00 AM	S	0.9
28 Feb 2024	6:00 AM	SE	0.5
28 Feb 2024	7:00 AM	SE	0.9

February 2024			
Wind Speed and Directions			
Date	**Time**	**Direction**	**Wind Speed m-s**
28 Feb 2024	8:00 AM	ESE	0.1
28 Feb 2024	9:00 AM	ESE	0.8
28 Feb 2024	10:00 AM	SE	0.3
28 Feb 2024	11:00 AM	S	0.5
28 Feb 2024	12:00 PM	S	0.6
28 Feb 2024	1:00 PM	SSW	0.6
28 Feb 2024	2:00 PM	SSE	0.5
28 Feb 2024	3:00 PM	SE	0.2
28 Feb 2024	4:00 PM	SSE	0.1
28 Feb 2024	5:00 PM	S	0.4
28 Feb 2024	6:00 PM	S	0.0
28 Feb 2024	7:00 PM	SE	0.9
28 Feb 2024	8:00 PM	S	0.3
28 Feb 2024	9:00 PM	S	0.0
28 Feb 2024	10:00 PM	SSW	0.7
28 Feb 2024	11:00 PM	SSW	0.0
29 Feb 2024	12:00 AM	S	0.7
29 Feb 2024	1:00 AM	S	0.4
29 Feb 2024	2:00 AM	S	0.3
29 Feb 2024	3:00 AM	SSE	0.9
29 Feb 2024	4:00 AM	SSW	0.4
29 Feb 2024	5:00 AM	SSE	0.4
29 Feb 2024	6:00 AM	SSE	0.3
29 Feb 2024	7:00 AM	S	0.0
29 Feb 2024	8:00 AM	SSE	0.3
29 Feb 2024	9:00 AM	SSE	0.1
29 Feb 2024	10:00 AM	S	0.7
29 Feb 2024	11:00 AM	SSE	0.4
29 Feb 2024	12:00 PM	S	0.4
29 Feb 2024	1:00 PM	S	0.6
29 Feb 2024	2:00 PM	SSE	0.2
29 Feb 2024	3:00 PM	W	0.4
29 Feb 2024	4:00 PM	S	0.6
29 Feb 2024	5:00 PM	SW	0.1
29 Feb 2024	6:00 PM	SSE	0.4
29 Feb 2024	7:00 PM	SSW	0.1
29 Feb 2024	8:00 PM	S	0.1
29 Feb 2024	9:00 PM	SW	0.5
29 Feb 2024	10:00 PM	SSE	0.4
29 Feb 2024	11:00 PM	SW	0.8

APPENDIX D
ENVIRONMENTAL MONITORING SCHEDULES

Contract No. HY/2019/13
Environmental Monitoring Works for Contract No. HY/2019/13
Central Kowloon Route-Buildings, Electrical and Mechanical Works (Ho Man Tin Area)
Tentative Impact Air and Noise Monitoring Schedule for February 2024

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

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)
* The noise level limit is 65dB(A) during the exam period
# The 24-hr TSP samples are collected on the next working day following the monitoring day.

Air Quality Monitoring Station
M-A3 - S.K.H. Tsoi Kung Po Secondary School

Noise Monitoring Station
M-N3 - S.K.H. Tsoi Kung Po Secondary School

Contract No. HY/2019/13
Environmental Monitoring Works for Contract No. HY/2019/13
Central Kowloon Route-Buildings, Electrical and Mechanical Works (Ho Man Tin Area)
Tentative Impact Air and Noise Monitoring Schedule for March 2024

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

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)
* The noise level limit is 65dB(A) during the exam period
# The 24-hr TSP samples are collected on the next working day following the monitoring day.

Air Quality Monitoring Station
M-A3 - S.K.H. Tsoi Kung Po Secondary School

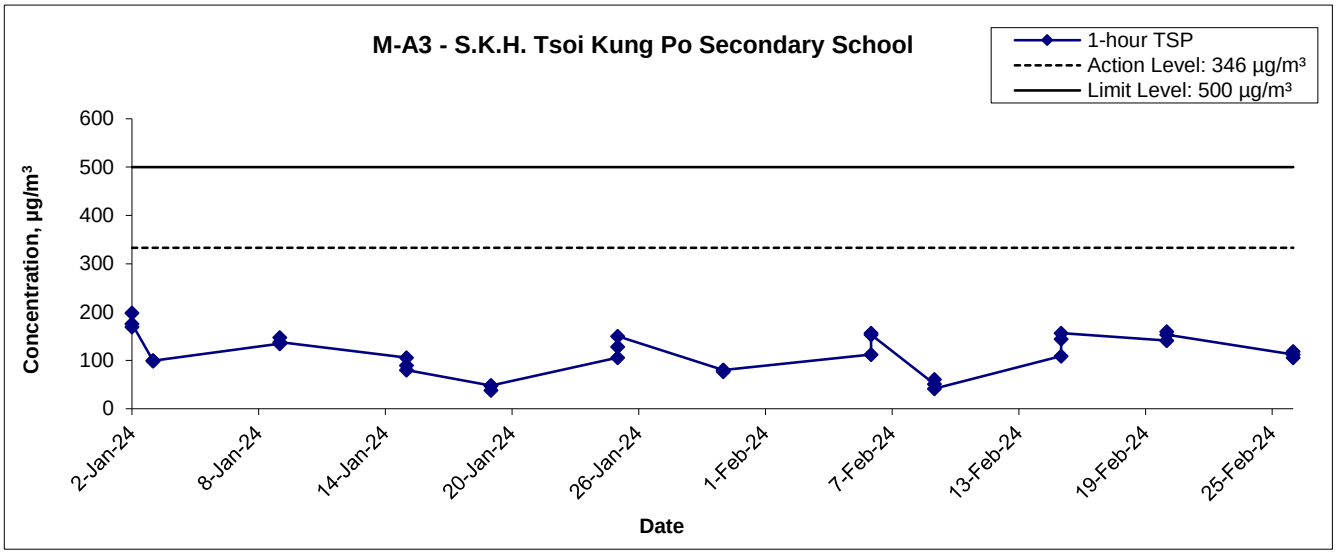
Noise Monitoring Station
M-N3 - S.K.H. Tsoi Kung Po Secondary School

APPENDIX E
1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix E - 1-hour TSP Monitoring Results

Location M-A3 - S.K.H. Tsoi Kung Po Secondary School			
Date	Time	Weather	Particulate Concentration (μg/m^3)
6-Feb-24	14:00	Sunny	112.0
6-Feb-24	15:00	Sunny	156.8
6-Feb-24	16:00	Sunny	153.6
9-Feb-24	14:00	Fine	51.2
9-Feb-24	15:00	Fine	60.8
9-Feb-24	16:00	Fine	41.6
15-Feb-24	14:00	Fine	108.8
15-Feb-24	15:00	Fine	144.0
15-Feb-24	16:00	Fine	156.8
20-Feb-24	14:00	Sunny	140.8
20-Feb-24	15:00	Sunny	160.0
20-Feb-24	16:00	Sunny	153.6
26-Feb-24	14:00	Sunny	112.0
26-Feb-24	15:00	Sunny	105.6
26-Feb-24	16:00	Sunny	118.4
		Average	118.4
		Maximum	160.0
		Minimum	41.6
		Action Level	275.0
		Limit Level	**500.0**

1-hr TSP Concentration Levels



Title: Contract No. HY/2019/13 Central Kowloon Route – Buildings, Electrical and Mechanical Works Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S	Project No.: MA20024	CINOTECH
	Date: Feb 24	Appendix: E	

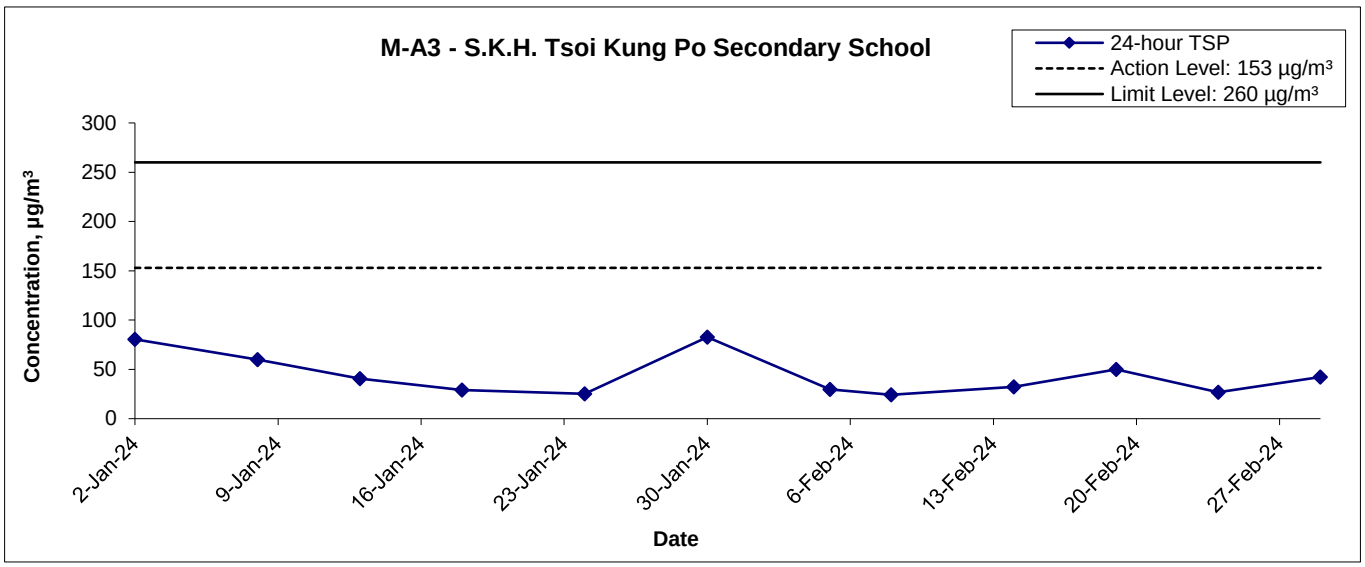
APPENDIX F
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix F - 24-hour TSP Monitoring Results

Location M-A3 - S.K.H. Tsoi Kung Po Secondary School

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time (hrs.)	Flow Rate (m^3/min.)		Av. Flow (m^3/min)	Total vol. (m^3)	Conc. (µg/m^3)	Action Level (µg/m3)	Limit Level (µg/m4)
				Initial	Final		Initial	Final		Initial	Final					
5-Feb-24	Fine	292.8	765.4	3.7014	3.7537	0.0523	11293.5	11317.5	24.0	1.22	1.22	1.22	1760.4	29.7	**157.0**	**<u>260.0</u>**
8-Feb-24	Fine	285.9	766.9	3.7175	3.7609	0.0434	11317.5	11341.5	24.0	1.24	1.25	1.24	1790.2	24.3		
14-Feb-24	Sunny	294.7	765.7	3.3171	3.3725	0.0554	11341.5	11365.5	24.0	1.19	1.19	1.19	1717.2	32.3		
19-Feb-24	Fine	296.3	762.2	3.3183	3.4039	0.0855	11365.5	11389.5	24.0	1.19	1.18	1.19	1706.6	50.1		
24-Feb-24	Fine	291.0	766.7	3.3594	3.4056	0.0463	11389.5	11413.5	24.0	1.20	1.20	1.20	1731.9	26.7		
29-Feb-24	Fine	289.0	765.6	3.3415	3.4151	0.0735	11413.5	11437.5	24.0	1.20	1.21	1.21	1737.5	42.3		
													Min	24.3		
													Max	50.1		
													Average	34.2		

24-hr TSP Concentration Levels



Title	Contract No. HY/2019/13 Central Kowloon Route – Buildings, Electrical and Mechanical Works Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S Date Feb 24	Project No. MA20024 Appendix F	CINOTECH

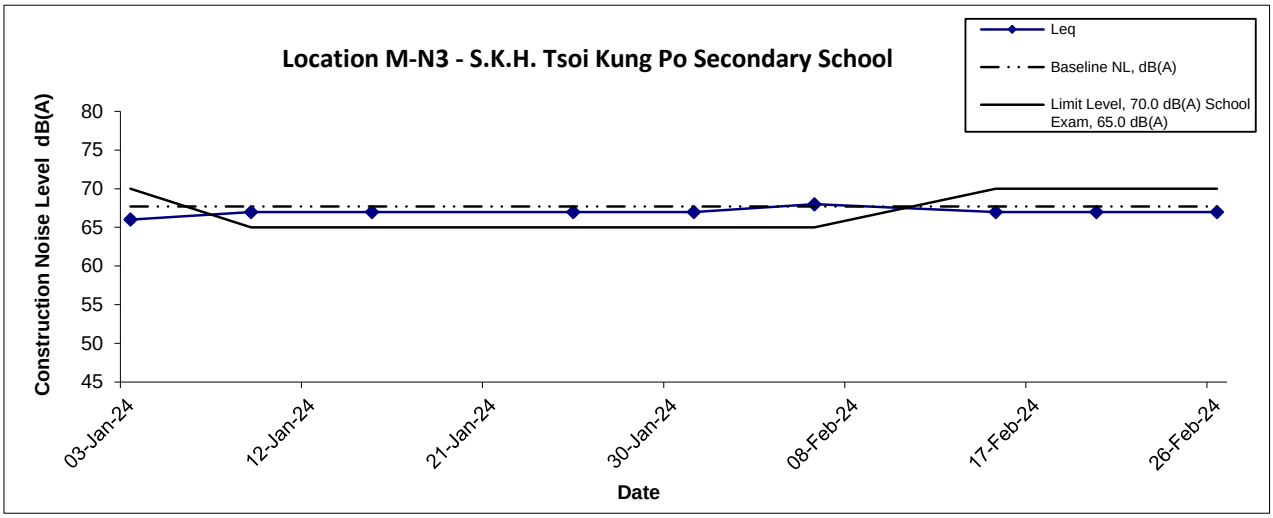
APPENDIX G
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATIONS

Appendix G - Noise Monitoring Results

(0700-1900 hrs on Normal Weekdays)
Limit Level - 70.0 dB(A) / School Exam - 65.0 dB(A)

Location M-N3 - S.K.H. Tsoi Kung Po Secondary School							
Date	Time	Weather	Unit: dB (A) (30-min)				
			Measured Noise Level			Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}
06-Feb-24	11:34	Fine	67.5	69.7	62.5	67.7	68 Measured ≦ Baseline
15-Feb-24	10:10	Sunny	67.1	69.5	65.3	67.7	67 Measured ≦ Baseline
20-Feb-24	14:18	Fine	66.5	69.2	59.8	67.7	67 Measured ≦ Baseline
26-Feb-24	13:08	Fine	67.1	69.4	61.8	67.7	67 Measured ≦ Baseline

Noise Levels



Title Contract No. HY/2019/13 Central Kowloon Route – Buildings, Electrical and Mechanical Works Graphical Presentation of Construction Noise Monitoring Results	Scale N.T.S Date Feb-24	Project No. MA20024 Appendix G	CINOTECH

APPENDIX H
SUMMARY OF EXCEEDANCE

Appendix H – Summary of Exceedance

Exceedance Record for Contract No. HY/2019/13
Reporting Month: February 2024

(A) Exceedance Record for Air Quality:
(NIL in the reporting month)

(B) Exceedance Record for Construction Noise:

Action Level Exceedance:

One (1) Action Level exceedance was recorded on 7 Feb, as a complaint was received regarding noise nuisance caused by mechanical equipment at the construction site after 7 pm. The Contractor consents to enhanced mitigation measures including the installation of a noise barrier, and closely monitoring the noise source. The noise levels are kept in a reasonable range from the noise monitoring results after the day of the complaint. The summary of the environmental complaint is presented in **Appendix K**.

(C) Exceedance Record for Landscape and Visual:
(NIL in the reporting month)

APPENDIX I
EVENT ACTION PLANS

5.10 Event and Action Plan

5.8.1 Should non-compliance of the air quality criteria occur, actions in accordance with the Action Plan in **Table 5.3** shall be carried out.

Table 5.3 Event / Action Plan for Air Quality

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER;	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	8. If exceedance stops, cease additional monitoring.			
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.		work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	works as determined by the ER until the exceedance is abated.

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

Table 6.4 Event / Action Plan for Construction Noise

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
Action Level	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Notify IEC and Contractor; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1.Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Limit Level	1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1.Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.		instruct the Contractor to stop that portion of work until the exceedance is abated.	abated.

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

Table 11.2 Event / Action Plan for Landscape and Visual during construction phase

Action Level	ET	IEC	ER	Contractor
Non-conformity on one occasion	1. Identify source(s) 2. Inform the Contractor, IEC and ER 3. Discuss remedial actions and preventive measures with IEC, ER and Contractor 4. Monitor remedial action(s) and preventive measures until rectification has been completed	1. Check inspection report 2. Check Contractor's working method 3. Discuss with ET, ER and Contractor on possible remedial measure(s) and preventive measure(s) 4. Advise ER on effectiveness of proposed remedial measure(s) and preventive measure(s) 5. Check implementation of proposed remedial measure(s) and preventive measure(s)	1. Confirm receipt of notification of non-conformity in writing 2. Notify the Contractor 3. Review and agree on the remedial measure(s) and preventive measures proposed by the Contractor 4. Check implementation of remedial measure(s) and preventive measures	1. Identify source and investigate the non-conformity 2. Implement remedial measure(s) and preventive measure(s) 3. Amend working methods agreed with ER as appropriate 4. Rectify damage and undertake any necessary replacement
Repeated Non-conformity	1. Identify source(s) 2. Inform Contractor, IEC and ER 3. Discuss inspection frequency 4. Discuss remedial action(s) and preventive measures with IEC, ER and Contractor 5. Monitor remedial action(s) and preventive measure(s) until rectification has been completed 6. If non-conformity stops, cease any	1. Check inspection report 2. Check Contractor's working method 3. Discuss with ET, ER and Contractor on possible remedial measure(s) and preventive measure(s) 4. Advise ER on effectiveness of proposed remedial measure(s) and preventive measures 5. Supervise implementation of proposed remedial measure(s) and preventive measure(s)	1. Notify the Contractor 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measure(s) and preventive measure(s) to be implemented 3. Supervise implementation of remedial measure(s) and preventive measure(s)	1. Identify source and investigate the non-conformity 2. Implement remedial measure(s) and preventive measure(s) 3. Amend working methods agreed with ER as appropriate 4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by ER until the non-conformity is abated.

Action Level	ET	IEC	ER	Contractor
	additional monitoring			

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

APPENDIX J
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
Construction Dust Impact								
S4.3.10	D1	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	- APCO - To control the dust impact to meet HKAQO and TM-EIA criteria	^
S4.3.10	D2	Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.3 L/m2 to achieve the dust removal efficiency.	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	- APCO - To control the dust impact to meet HKAQO and TM-EIA criteria	^
S4.3.10	D3	Proper watering at exposed spoil should be undertaken throughout the construction phase.	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	- APCO - To control the dust impact to meet HKAQO and TM-EIA criteria	^
		Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading.						^
		Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads.						^
		A stockpile of dusty material should not be extended beyond the pedestrian barriers, fencing or traffic cones.						^
		The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting to ensure that the dusty materials do not leak from the vehicle.						^
		Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores.						^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided and properly maintained as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period.						^
		The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials.						^
		Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously.						^
		Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet						^
		Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding.						N/A
		Any skip hoist for material transport should be totally enclosed by impervious sheeting.						^
		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.						N/A
		Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system.						N/A

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabilizer within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.						N/A
S4.3.10	D6	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Selected rep. dust monitoring station	Construction stage	- TM-EIA	^
Construction Noise (Airborne)								
S5.4.1	N1	Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme.	Control construction airborne noise	Contractor	All construction sites	Construction stage	- Annex 5, TM-EIAO	^
		Machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.						^
		Plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs.						^
		Silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works.						^
		Mobile plant should be sited as far away from NSRs as possible and practicable.						^
		Material stockpiles, mobile container site office and other structures should be effectively utilized, where practicable, to screen noise from on-site construction activities.						N/A
S5.4.1	N2	Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening	Contractor	All construction sites	Construction stage	- Annex 5, TM-EIAO	^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
S5.4.1	N3	Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressors, generators and handheld breakers, etc.	Sreen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction stage	- Annex 5, TM-EIAO	N/A
S5.4.1	N4	Use 'Quiet plants'	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction stage	- Annex 5, TM-EIAO	^
S5.4.1	N5	Loading/ unloading activities should be carried out inside the full enclosure of mucking out points.	Reduce the noise levels of loading/ unloading activities	Contractor	Mucking out locations	Construction stage	- Annex 5, TM-EIAO	^
S5.4.1	N6	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction stage	- Annex 5, TM-EIAO	^
S5.4.1	N7	Implement a noise monitoring programme under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected rep. noise monitoring station	Construction stage	- TM-EIAO	N/A
Water Quality (Construction Phase)								
S6.9.1.1	W1	Construction Runoff At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction.	To minimize water quality impact from the construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction stage	- Water Pollution Control Ordinance - ProPECC PN 1/94 - TM-EIAO - TM-DSS	^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a silt/ sediment trap. The sediment/ silt traps should be incorporated in the permanent drainage channels to enhance deposition rates.						^
		The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/ sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m3/s a sedimentation basin of 30 m3 would be required and for a flow rate of 0.5 m3/s the basin would be 150 m3. The detailed design of the sand/ silt traps shall be undertaken by the contractor prior to the commencement of construction.						^
		All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. Exposed slope surfaces should be covered by tarpaulin or other means.						N/A
		The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows, and all traffic areas and access roads protected by coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows.						N/A
		All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas.						^
		Measures should be taken to minimize the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.						^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.						^
		Manholes should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.						^
		Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.						^
		All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and site wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel wash bay to the public road should be paved with sufficient backfall toward the wheel wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.						^
		Oil interceptors should be provided in the drainage system downstream of any oil/ fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain.						^
		Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.						^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby.						^
		Adopt best management practices.						^
		All earth works should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable.						^
S6.9.1.2	W2	<u>Tunneling Works and Underground Works</u> Cut-&-cover tunneling work should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable.	To minimize construction water quality impact from tunneling works	Contractor	All tunneling portion	Construction stage	- Water Pollution Control Ordinance - ProPECC PN 1/94 - TM-EIAO - TM-DSS	N/A
		Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge.						N/A
		The wastewater with a high concentration of SS should be treated (e.g. by sedimentation tanks with sufficient retention time) before discharge. Oil interceptors would also be required to remove the oil, lubricants and grease from the wastewater.						N/A
		Direct discharge of the bentonite slurry (as a result of D-wall) is not allowed. It should be reconditioned and reused wherever practicable. Temporary storage locations (typically a properly closed warehouse) should be provided on site for any unused bentonite that needs to be transported away after all the related construction activities area completed. The requirements in ProPECC PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.						N/A
S6.9.1.3	W3	<u>Sewage Effluent</u> Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	To minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction stage	- Water Pollution Control Ordinance - TM-DSS	^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
S6.9.1.5	W4	<u>Groundwater from Potential Contaminated Area:</u> No direct discharge of groundwater from contaminated areas should be adopted.	To minimize groundwater quality impact from contaminated area	Contractor	Excavation areas where contamination is found	Construction stage	- Water Pollution Control Ordinance - TM-EIAO - TM-DSS	^
		A discharge license under the WPCO through the Regional Office of EPD for groundwater discharge should be applied. Prior to the excavation works within these potentially contaminated areas, the groundwater quality should be reviewed during the process of discharge license application. The compliance to the Technical Memorandum on Standards for Effluents Discharged into Drainage on Sewerage Systems, Inland and Coastal Waters (TM-DSS) and the existence of prohibited substance should be confirmed. If the review results indicated that the groundwater to be generated from the excavation works would be contaminated, the contaminated groundwater should be either properly treated in compliance with the requirements of the TM-DSS or properly recharged into the ground.					^
		If wastewater treatment is deployed, the wastewater treatment unit shall deploy suitable treatment process (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (e.g. TPH) to undetectable range. All treated effluent from wastewater treatment plant shall meet the requirements as stated in TM-DSS and should be discharged into the foul sewers.						^
		If groundwater recharging wells are deployed, recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in the Section 2.3 of TM-DSS. The baseline groundwater quality shall be determined prior to the selection of the recharge wells, and submit a working plan (including the laboratory analytical results showing the quality of groundwater at the proposed recharge location(s) as well as the pollutant levels of groundwater to be recharged) to EPD for agreement. Pollution levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Prior to recharge, any prohibited substances such as TPH products should be removed as necessary by installing the petrol interceptor.						N/A

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
S6.9.1.6	W6	Accidental Spillage All the tanks, containers, storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and stormwater drains.	To minimize water quality impact from accidental spillage	Contractor	All construction site where practicable	Construction stage	- Water Pollution Control Ordinance - ProPECC PN 1/94 - TM-EIAO - TM-DSS	*
		The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings.						^
		Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste Disposal (Chemical Waste) (General) Regulation.						^
Waste Management (Construction Waste)								
S7.4.1	WM1	On-site sorting of C&D material Geological assessment should be carried out by competent persons on site during excavation to identify materials which are not suitable to use as aggregate in structural concrete (e.g. volcanic rock, Aplite dyke rock, etc.). Volcanic rock and Aplite dyke rock should be separated at the source sites as far as practicable and stored at designated stockpile area preventing them from delivering to crushing facilities. The crushing plant operator should also be reminded to set up measures to prevent unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use. Details regarding control measures at source site and crushing facilities should be submitted by the Contractor for the Engineer to review and agree. In addition, site records should also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) No. 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc. should be explored.	Separation of unsuitable rock from ending up at concrete batching plants and be turned into concrete for structural use	Contractor	All construction sites	Construction stage	· DEVB (W) No. 6/2010	^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
S7.5.1	WM2	<u>Construction and Demolition Material</u> Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement.	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	· Land (Miscellaneous Provisions) Ordinance · Waste Disposal Ordinance · ETWB TCW No. 19/2005	^
		Carry out on-site sorting.						^
		Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate						^
		Adopt 'selective demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible.						N/A
		Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified.						^
		Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction.						^
S7.5.1	WM3	<u>C&D Waste</u> Standard formwork or pre-fabrication should be used as far as practicable in order to minimize the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage.	Good site practice to minimize the waste generation and recycle the C&D materials as far as practicable so as to reduce the amount for final disposal	Contractor	All construction sites	Construction stage	· Land (Miscellaneous Provisions) Ordinance · Waste Disposal Ordinance · ETWB TCW No. 19/2005	^
		The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.						N/A

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
S7.5.1	WM4	Excavated Contaminated Soils Details of the mitigation measures on handling of the contaminated soil shall be referred to Section on Land Contamination below.	The contaminated soil will be excavated for on-site reuse	Contractor	PBH4	Prior to commencement of construction works within the contaminated area	· Practice Guide (PG) for Investigation and Remediation of Contaminated Land · GN/GM for land contamination	^
S7.5.1	WM5	Land-based and Marine-based Sediment All construction plant and equipment shall be designed and maintained to minimize the risk of silt, sediments, contaminants or other pollutants being released into the water column or deposited in the locations other than designated location.	To control pollution due to marine sediment	Contractor	Along CKR alignment	Construction stage	· ETWB TCW No. 34/2002	^
		All vessels shall be sized such that adequate draft is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash.						N/A
		Before moving the vessels which are used for transporting dredged material, excess material shall be cleaned from the decks and exposed fittings of vessels and the excess materials shall never be dumped into the sea except at the approved locations.						N/A
		Adequate freeboard shall be maintained on barges to ensure that decks are not washed by wave action.						N/A
		The Contractors shall monitor all vessels transporting material to ensure that no dumping outside the approved location takes place. The Contractor shall keep and produce logs and other records to demonstrate compliance and that journeys are consistent with designated locations and copies of such records shall be submitted to the engineers.						N/A
		The Contractors shall comply with the conditions in the dumping licence.						^
		All bottom dumping vessels (Hopper barges) shall be fitted with tight fittings seals to their bottom openings to prevent leakage of material.						N/A
		The material shall be placed into the disposal pit by bottom dumping.						N/A

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		Contaminated marine mud shall be transported by spit barge of not less than 750m3 capacity and capable of rapid opening and discharge at the disposal site.						N/A
		Discharge shall be undertaken rapidly and the hoppers shall be closed immediately. Material adhering to the sides of the hopper shall not be washed out of the hopper and the hopper shall remain closed until the barge returns to the disposal site.						N/A
		For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping designated mud pit would be a possible arrangement. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfilling the requirements for fully confined mud disposal.						N/A
S7.5.1	WM6	<u>Chemical Waste</u> Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.	Control the chemical waste and ensure proper storage, handling and disposal	Contractor	All construction sites	Construction stage	· Waste Disposal (Chemical Waste) (General) Regulation · Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	^
		Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed, have a capacity of less than 450 L unless the specification has been approved by EPD, and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation.						^
		The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste, enclosed on at least 3 sides, have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20% of the total volume of waste stored in that area, whichever is the greatest, have adequate ventilation, covered to prevent rainfall entering, and arranged so that incompatible materials are adequately separated.						^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
		Disposal of chemical waste should be via a licensed waste collector, be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers, or be to a reuser of the waste, under approval from EPD.						^
S7.5.1	WM7	General Refuse General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction stage	· Waste Disposal Ordinance	^
		A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law.						^
		Aluminum cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible.						^
		Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor.						^
Land Contamination								
S8.9 & Appendix 8.4	LC2	Excavation of the Contaminated Soil Prior to commencement of the excavation works at the contamination zone, the zone should be clearly marked out on site and the surface levels recorded. Excavation of contaminated material should be undertaken using dedicated earth-moving plant.	The contaminated soil will be excavated for on-site reuse	Contractor	PBH4	Prior to commencement of construction works within the contaminated area	· Practice Guide (PG) for Investigation and Remediation of Contaminated Land - Guidance Notes for Contaminated Land Assessment and Remediation · Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management	N/A
		The excavated contaminated soils would be stockpiled at designated area on site and covered by sheet to prevent dispersion of contamination during stockpiling.						N/A
		The Contractor should pay attention to the selection of suitable groundwater lowering schemes and discharge points if the groundwater table is higher than the contaminated soils during excavation. The Contractor should also obtain a valid Water Pollution Control Ordinance (WPCO) discharge licence from EPD where applicable.						N/A

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
Hazard to Life								
S9.18	H8	The driver and his assistant should be physically healthy, experienced and have good safe driving records. The driver should hold a proper driving licence for the approved transport truck. Dedicated training programme and regular road safety briefing sessions/ workshops should be provided to enhance their safe driving attitude and practice. Smoking should be strictly prohibited.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction stage	/	^
S9.18	H9	Emergency response plans in case of road accident should be prepared and implemented. The driver and his assistant should be familiar with the emergency procedures including evacuation, and proper communication/ fire-fighting equipment should be provided to the driver and his assistant.	To reduce the risk during explosives transport	Contractor	Works areas at which explosives would be used	Construction stage	/	^
Landscape and Visual								
S10.10.1 Table 10.11	LV3	<u>Good Site Management</u> Large temporary stockpiles of excavated material shall be covered with unobtrusive sheeting to prevent dust and dirt spreading to adjacent landscape areas and vegetation, and to create a neat and tidy visual appearance.	Minimize visual impact	Contractor	Within Project site	Construction Phase	/	^
		Construction plant and building material shall be orderly and carefully stored in order to create a neat and tidy visual appearance.						^
S10.10.1 Table 10.11	LV4	<u>Screen Hoarding</u> Decorative screen hoarding should be erected to screen the public from the construction area. It should be designed to be compatible with the existing urban context.	Minimize visual impact	Contractor	Within Project site	Construction Phase	/	^
S10.10.1 Table 10.11	LV5	<u>Lighting Control during Construction</u> All lighting in the construction site shall be carefully controlled to minimize light pollution and night-time glare to nearby residencies and GIC. The Contractor shall consider other security measures, which shall minimize the visual impacts.	Minimize visual impact	Contractor	Within Project site	Construction Phase	/	^
S10.10.1 Table 10.11	LV6	<u>Erosion Control</u> The potential for soil erosion shall be reduced by minimizing the extent of vegetation disturbance on site and by providing a protective cover over newly exposed soil.	Minimize landscape impact	Contractor	Within Project site	Construction Phase	/	^

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
S10.10.1 Table 10.11	LV7	Tree Protection & Preservation Carefully protected during construction. Tree protection measures will be detailed at the Tree Removal Application stage and plans submitted to the relevant Government Department for approval in due course in accordance with ETWB TC no. 3/2006.	Minimize landscape and visual impact	Contractor	Within Project site	Construction Phase	· 'Guidelines for Tree Risk Management and Assessment Arrangement on an Area Basis and on a Tree Basis', Greening, Landscape and Tree Management (GLTM) Section, DEVB · Latest recommended horticultural practices from GLTM Section,	N/A
S10.10.1 Table 10.11	LV8	Tree Transplantation For trees unavoidably affected by the Project that have to be removed, where practical transplantation will be chosen as the top priority method of removal. If this is not possible or practical compensatory planting will be provided for trees unavoidably felled (See LV10). For trees unavoidably affected by the Project works that are transplanted, transplantation must be carried out in accordance with ETWB TCW 2/2004 and 3/2006.	Minimize landscape and visual impact	Contractor	Within Project site and designated off-site locations	Prior to Construction Phase	· ETWB TCW 3/2006 · Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DEVB · ETWB TCW 2/2004	N/A
S10.10.1 Table 10.11	LV9	Compensatory Planting For trees unavoidably affected by the Project that have to be removed, where practical transportation will be chosen as the top priority method of removal but if this is not possible or practical compensatory planting will be provided for trees unavoidably felled. All felled trees shall be compensated for by planting trees to the satisfaction of relevant Government projects. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006.	Minimize visual impact and also enhance landscape	Contractor	Within Project site	Construction Phase	· ETWB TCW 3/2006 · Latest recommended horticultural practices from Greening, Landscape and Tree Management (GLTM) Section, DEVB · ETWB TCW 2/2004	N/A

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
S10.10.1 Table 10.11	LV10	Screen Planting Tall screen/buffer trees, shrubs and climbers should be planted, in so far as is possible, to soften and screen proposed structures such as roads and central strip, vertical edges and buildings and to enhance streetscape greening effect where appropriate. Indiscriminate use of trees for screening must be avoided and the principle of 'right tree for the right place' must be followed. This detail will be provided at the Detailed Design stage. This measure may additionally form part of the compensatory planting and will improve and create a pleasant pedestrian environment.	Minimize visual impact and also enhance landscape	Contractor	Within Project site	Construction Phase	· Guidelines on Greening of Noise Barriers, issued April 2012, GLTMS, DevB · ETWB TCW 2/2004	N/A
S10.10.1 Table 10.11	LV11	Green Roof Roof greening will be established on ventilation and administration buildings to reduce exposure to untreated concrete surfaces and particularly mitigate visual impact to VSRs at high levels.	Minimize landscape and visual impact	Contractor	Within Project site	Construction Phase	/	N/A
S10.10.1 Table 10.11	LV12	Reinstatement All works areas, excavated areas and disturbed areas for tunnel construction and temporary road diversion or any other proposed works shall be reinstated to former conditions or better, with reasonable landscape treatment and to the satisfaction of the relevant Government departments. (Specific mitigation for disturbance to public open space is detailed separately under LV14)	Minimize landscape impact	Contractor	Within Project site	Construction Phase	/	N/A
S10.10.1 Table 10.11	LV13	Reprovising of Public Open Space All areas of public open space affected by the Project will be reprovisioned either at the same location following the completion of temporary works, or at a separate site, as agreed with relevant Government departments. Open space should be re-provisioned in an enhanced manner.	Minimize landscape impact	Contractor	Within Project site	Construction Phase	Open space should be re-provided in an enhanced manner.	N/A
Cultural Heritage Impact (Construction Phase)								
S11.4.4	CH1	The contractor should be alerted during the construction on the possibility of locating archaeological remains and as a precautionary measure, AMO shall be informed immediately in case of discovery of antiquities or supposed antiquities in the subject sites.	To preserve any cultural heritage items which may be removed and damaged by the excavation	Contractor	During construction works for cut and cover tunnels	During the Construction Phase	· AMOs requirements	N/A

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Implementation Agent	Location / Timing	Implementation Stage	Requirements and/ or standards to be achieved	Implementation Status
EM&A Project								
S13.2	EM1	An Independent Environmental Checker needs to be employed as per the EM&A Manual	Control EM&A Performance	Highways Department	All construction sites	Construction stage	· EIAO Guidance Note No. 4/2010 · TM-EIAO	^
S13.2-13.4	EM2	An Environmental Team needs to be employed as per the EM&A Manual.	Perform environmental monitoring & auditing	Highways Department/ Contractor	All construction sites	Construction stage	· EIAO Guidance Note No. 4/2010 · TM-EIAO	^
		Prepare a systematic Environmental Management Plan to ensure effective implementation of the mitigation measures;						^
		An environmental impact monitoring needs to be implemented by the Environmental Team to ensure all the requirements given in the EM&A Manual are fully complied with.						^

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

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

Complaint Log on Reporting Month (February 2024)

Log Ref.	Location	Received Date	Details of Complaint/warning/ summon and prosecution	Investigation/ Mitigation Action	Status
EC004_CKRBEM20240207_004	HVB	7 Feb 2024	A complaint was received from 1823 on 7 Feb 2024 regarding noise nuisance caused by mechanical equipment at the construction site near Chung Hau St. and Fat Kwong St. after 7 pm.	Enhance mitigation measures including installation for noise barrier, and closely monitoring the noise source.	EPD and HyD have no further comment. The complainant has responded to the first reply. The handling of the complaint is in progress.

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

Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions and Public Engagement Activities

Reporting Period	Site Location	Frequency	Cumulative	Details
February 2024	Kai Tak East	Environmental Complaint Statistics		
		0	3	N/A
		Environmental Non-compliance Statistic		
		0	0	N/A
		Environmental Summon and Prosecution Statistic		
		0	0	N/A
	Yau Ma Tei West	Environmental Complaint Statistics		
		0	0	N/A
		Environmental Non-compliance Statistic		
		0	0	N/A
		Environmental Summon and Prosecution Statistic		
		0	0	N/A
	Ho Man Tin	Environmental Complaint Statistics		
		1	1	EC004_CKRBEM20240207_004
		Environmental Non-compliance Statistic		
		0	0	N/A
		Environmental Summon and Prosecution Statistic		
		0	0	N/A

APPENDIX L
SUMMARY OF WASTE GENERATION AND DISPOSAL RECORDS

Monthly Summary Waste Flow Table

[PS Clauses 25.24(11)S & 25.34(16)(a)] Annex 4 to Appendix C

Name of Department: HyD Contract No.: HY/2019/13

Central Kowloon Route - Buildings, Electrical and Mechanical Works

Ho Man Tin Site Area

Monthly Summary Waste Flow Table for 2024 (year)

	Actual Quantites of Inert C&D Materials Generated Monthly						Actual Quantites of C&D Waste Generated Monthly					
Month	Total Quantity Generated (in '000m3)	Hard Rock and Large Broken Concrete (see Note 5) (in '000m3)	Reused in the Contract (see Note 5) (in '000m3)	Reused in other Projects (see Note 5) (in '000m3)	Disposed as Public Fill (see Note 5) (in '000m3)	Imported Fill (see Note 5) (in '000m3)	Metals (in '000kg)	Paper / cardboard packaging (in '000kg)	Plastics (see Note 3) (in '000kg)	Chemical Waste (see Note 5) (in '000kg)	Marine Sediment (see Note 7) (in '000m3)	Others, e.g. general refuse (see Note 5) (in '000m3)
Jan	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.127
Feb	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.294
Mar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Apr	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
May	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Jun	0.000	0.000	0.000	0.000	0.000	0.000	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**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.421**
Jul	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Aug	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sep	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Oct	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Nov	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dec	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total (2024)	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.421**
Total (whole)	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.421**

Note:

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

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

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

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

(5) Density values and Bulk Factors adopted:

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

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

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

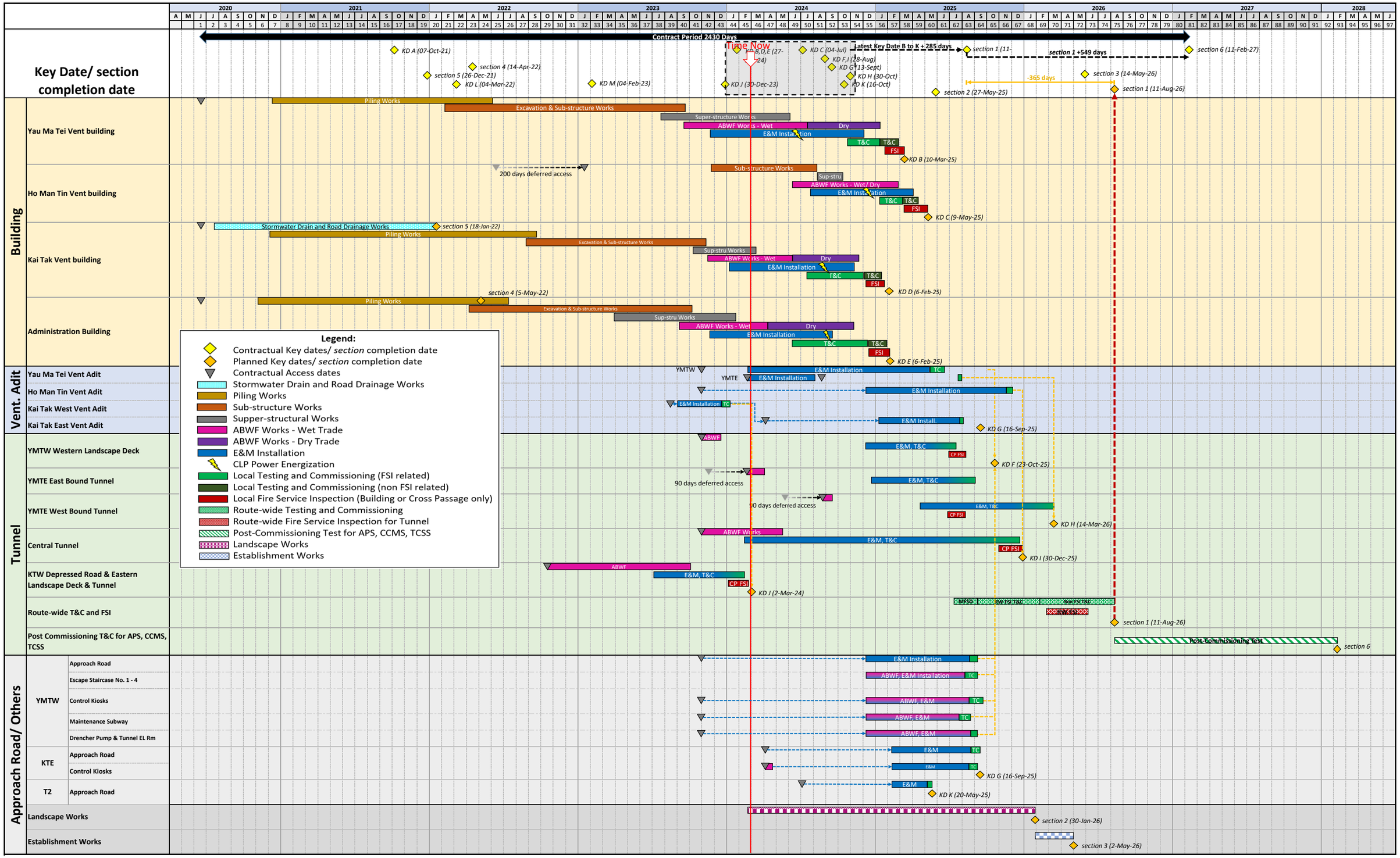
APPENDIX M
CONSTRUCTION PROGRAMME

Gammon

Ref. Detailed Programme (Dec-2022)

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

HIGHWAYS DEPARTMENT
MAJOR WORKS PROJECT MANAGEMENT OFFICE



Central Kowloon Route

Central Tunnel

Contract No. HY/2018/08

Monthly EM&A Report No. 54 (March 2024)

0097/19/ED/0884 02 | 7 March 2024
Verified
Bouygues Travaux Publics – Contract No. HY/2018/08

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

ERM

Environmental Permit No. EP-457/2013/D

Central Kowloon Route

Independent Environmental Checker Verification

Works Contract:	**Central Tunnel (HY/2018/08)**

Reference Document/Plan

Document/~~Plan~~ to be ~~Certified~~/ Verified:	Monthly EM&A Report No.54
Date of Report:	7 March 2024
Date received by IEC:	7 March 2024

Reference EP Condition

Environmental Permit Condition: 3.4

Submission of Monthly EM&A Report of the Project

3.4 Four hard copies and one electronic copy of monthly EM&A Report shall be submitted to the Director within 2 weeks after the end of each reporting month throughout the entire construction period. The EM&A Reports shall include a summary of all non-compliance. The submissions shall be certified by the ET Leader and verified by the IEC as complying with the requirements as set out in the EM&A Manual before submission to the Director. Additional copies of the submission shall be provided to the Director upon request by the Director.

IEC Verification

I hereby verify that the above referenced document/~~plan~~ complies with the above referenced condition of EP-457/2013/D.

Ms Mandy To Date: 7 March 2024

Independent Environmental Checker

Our ref: 0436942_IEC Verification Cert_CT_Monthly EM&A Rpt No.54_20240307.docx

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Client Contact	Mr. KAM Hing Lam, Alan
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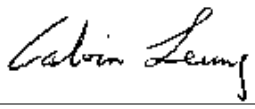
Environmental Team

Initials	Name	Role	Signature
EC	**Eric T. Chan**	**Assistant Environmental Consultant**	
CL	**Calvin M.P. Leung**	**Environmental Team Leader**	

EXECUTIVE SUMMARY

I. Introduction

This is the 54th Monthly EM&A Report prepared by Fugro Technical Services Limited for the Contract No. HY/2018/08 Central Kowloon Route – Central Tunnel. The Contract No. HY/2018/08 commenced on 19 September 2019. This report summarized the monitoring results and audits findings of the EM&A programme under the issued EP (EP No.: EP-457/2013/D) and in accordance with the EM&A Manual during the reporting period from 01/02/2024 to 29/02/2024.

II. Summary of Main Works Undertaken and Key Measures Implemented

The main construction works carried out in the reporting period were as follow:

Ho Man Tin[1]

- Underbreak scaling and smoothing works;
- Invert, lining and OHVD construction;
- Road improvement and re-surfacing work.

Yau Ma Tei

- Underbreak scaling and smoothing works;
- Plant and material lifting;
- Invert, lining and OHVD construction;
- Mucking out from tunnel;
- Road slab and invert slab construction;
- Waterproofing work;
- Extension of Noise Enclosure;
- Cut and cover construction.

Ma Tau Kok

- Underbreak scaling and smoothing works;
- Plant and material lifting;
- Invert, lining and OHVD construction;
- Mucking out from tunnel;
- Road slab and invert slab construction;
- Waterproofing work;
- Cut and cover construction.

Kai Tak Barging Point

- Material storage.

Sheung Lok Street

- Concreting.

Ma Hang Chung Road

- Concreting.

Note:
[1] Construction Work at Ho Man Tin site surface was substantially completed. The site had been handed over to Contract No. HY/2019/13 on 30 December 2023.

III. Summary of Exceedances, Investigation and Follow-up

The last impact monitoring conducted by ET of Contract HY/2018/08 at M-A3/ M-N3 was on 27 December 2023. Impact monitoring at M-A3/ M-N3 was subsequently conducted by Environmental Team of Contract HY/2019/13 since January 2024. The monitoring results at M-A3 and M-N3 are presented in the monthly EM&A Report prepared by Contract No. HY/2019/13.

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

Four (4) Action Level exceedance was recorded for construction noise due to the noise-related complaints received in the reporting month. No Limit Level exceedance was recorded for construction noise monitoring in the reporting month.

IV. Complaint Handling, Prosecution and Public Engagement.

All complaints received in the last reporting month were finalized.

Four (4) noise-related complaint (i.e. 17th, 20th 26th and 28th February 2024) were received in the reporting month.

The complaint cases in February 2024 are summarized in **Table I**.

Table I Environmental Complaints Log

Complaint Log No.	Date of Complaint	Received From	Nature of Complaint	Status
EC184_CKRCT20240217_766	17th February 2024	The Contractor Hotline	Nighttime Noise	Under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.
EC185_CKRCT20240220_767	20th February 2024	1823	Daytime and Nighttime Noise	Under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.
EC186_CKRCT20240226_768	26th February 2024	1823	Nighttime Noise	Under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.
EC187_CKRCT20240228_769	28th February 2024	The Contractor Hotline	Nighttime Noise	Under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.

No notification of summons and prosecutions were received in the reporting period.

No public engagement activities were conducted in the reporting period.

V. Reporting Change

There were no reporting changes during the reporting month.

VI. Future Key Issues

The main works will be anticipated in the next reporting period are as follow:

Ho Man Tin[1]

- Underbreak scaling and smoothing works;
- Invert, lining and OHVD construction.

Yau Ma Tei

- Underbreak scaling and smoothing works;
- Plant and material lifting;
- Invert, lining and OHVD construction;
- Mucking out from tunnel;
- Road slab and invert slab construction;
- Waterproofing work;
- Cut and cover construction.

Ma Tau Kok

- Underbreak scaling and smoothing works;
- Plant and material lifting;
- Invert, lining and OHVD construction;
- Mucking out from tunnel;
- Road slab and invert slab construction;
- Waterproofing work;
- Cut and cover construction

Kai Tak Barging Point

- Material storage.

Ma Hang Chung Road

- Concreting.

Note:
[1] Construction Work at Ho Man Tin site surface was substantially completed. The site had been handed over to Contract No. HY/2019/13 on 30 December 2023.

The recommended mitigation measures corresponding to the main works in the next reporting period are listed as follow:

- Good relationship shall be maintained with the nearby sensitive receivers/ stakeholders which may be affected by the construction works such as providing better/ more detail information of the work nature and inform in advance of the works to the nearby residents;
- Any excavated, stockpile of dusty material or load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting;
- All construction plants / machineries should be checked / serviced on a regular basis during the courses of construction to minimize the emission of noise generation and eliminate dark smoke emission;
- All C&D materials generated should be transported and stored at temporary storage area. Suitable materials should be sorted for reuse on-site;
- Every vehicle shall be cleaned thorough at the designated wheel washing area onsite;
- Wastewater generated from drilling shall be properly collected for reuse or treated by wastewater treatment facilities before discharge;
- Provision of drip trays for equipment likely cause spillage of chemical / fuel, and provide routine maintenance;
- Erecting temporary noise barrier for noisy Powered Mechanical Equipment (PME) and deployment of Quality Powered Mechanical Equipment (QPME) as many as practicable;
- Conditions in the Environmental Permit and License should be followed;
- All recommended mitigation measures specified in the approved EIA Report and EM&A Manual shall be implemented;
- All vehicles should be cleaned before leaving the construction site to ensure no muddy deposited by them on roads.

The following EP submissions were submitted during the reporting month:

Table II Status of Required Submission under Environmental Permit

EP Condition	Submission	Submission Date
3.4	Monthly EM&A Report (January 2024)	6 February 2024

Contents

Tables

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Appendices

1 INTRODUCTION

1.1 Background

1.1.1 In order to meet the traffic demand and relieve traffic congestion on the existing east-west roads across Central Kowloon, Central Kowloon Route (CKR) (hereinafter referred to as "the Project") is proposed which is a 4.7 km long dual 3-lane trunk road in Central Kowloon linking Yau Ma Tei Interchange in West Kowloon with the road network on Kai Tak Development and Kowloon Bay in East Kowloon.

1.1.2 The Central Kowloon Route – Design and Construction Environmental Impact Assessment Report (Register No.: AEIAR-171/2013) was approved with conditions by the Environmental Protection Department (EPD) on 11 July 2013. An Environmental Permit (EP-457/2013) was issued on 9 August 2013. A variation of EP (VEP-594/2021) was applied on 26 May 2021 and the latest EP (EP-457/2013/D) was issued by EPD on 15 June 2021.

1.1.3 Contract No. HY/2018/08 Central Kowloon Route – Central Tunnel (hereinafter referred to as "the Contract"), is one of the contracts of CKR which included the construction of the central tunnel, cut-and-cover tunnels at Yau Ma Tei and Ma Tau Kok and construction of piles and diaphragm walls for Ho Man Tin ventilation building.

1.1.4 Fugro Technical Services Limited (FTS) was appointed by Bouygues Travaux Publics (BTP) as the Environmental Team (ET) under the Contract no. HY/2018/08 to execute the environmental monitoring and audit (EM&A) programme under the issued EP (EP No.: EP-457/2013/D) and in accordance with the EM&A Manual.

1.1.5 This is the 54th Monthly EM&A Report prepared by FTS for the Contract No. HY/2018/08 Central Kowloon Route – Central Tunnel. The Contract No. HY/2018/08 commenced on 19 September 2019. This report summarized the monitoring results and audits findings of the EM&A programme under the issued EP (EP No.: EP-457/2013/D) and in accordance with the EM&A Manual during the reporting period from 01/02/2024 to 29/02/2024.

1.2 Project Organization

1.2.1 The Project Organization structure is shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1**.

Table 1.1 Contact Information of Key Personnel

Party	Position	Name	Telephone
Highways Department (HyD)	E13/CKR	Mr. Joe Lam	2762 3380
Arup-Mott MacDonald Joint Venture (AMMJV)	Senior Resident Engineer	Mr. Ben Poon	3619 5967
ERM-Hong Kong, Limited (ERM)	Independent Environmental Checker (IEC)	Ms. Mandy To	2271 3000
Bouygues Travaux Publics (BTP)	Environmental Manager	Mr. Simon Wong	9281 4346
Fugro Technical Services Limited	ET Leader	Mr. Calvin Leung	3565 4441

1.3 Construction Programme and Activities

1.3.1 The construction phase of this Contract under the EP commenced in October 2019. The site layout plan of the Contract is shown in **Figure 1**.

1.3.2 The construction programme of this Contract is shown in **Appendix A**.

1.4 Works undertaken during the month

1.4.1 The main construction works carried out in the reporting period were as follow:

Ho Man Tin[1]

- Underbreak scaling and smoothing works;
- Invert, lining and OHVD construction;
- Road improvement and re-surfacing work.

Yau Ma Tei

- Underbreak scaling and smoothing works;
- Plant and material lifting;
- Invert, lining and OHVD construction;
- Mucking out from tunnel;
- Road slab and invert slab construction;
- Waterproofing work;
- Extension of Noise Enclosure;
- Cut and cover construction.

Ma Tau Kok

- Underbreak scaling and smoothing works;
- Plant and material lifting;
- Invert, lining and OHVD construction;
- Mucking out from tunnel;
- Road slab and invert slab construction;

- Waterproofing work;
- Cut and cover construction

Kai Tak Barging Point

- Material storage.

Sheung Lok Street

- Concreting.

Ma Hang Chung Road

- Concreting.

Note:
[1] Construction Work at Ho Man Tin site surface was substantially completed. The site had been handed over to Contract No. HY/2019/13 on 30 December 2023.

1.5 Status of Environmental Licences, Notification and Permits

1.5.1 A summary of the relevant permits, licenses and/or notifications on environmental protection for this Contract is presented in **Table 1.2**.

Table 1.2 Environmental Licenses, Notification and Permits Summary

Permit/ Notification/ License	Reference No	Valid From	Valid Till
Form NB	448930, 448970, 448971	Mid-Sep 2019	NA
Billing Account for Disposal of C&D waste	Account no. 7034790	06 Aug 2019	NA
Chemical Waste Producer Registration (Ho Man Tin Construction site)	5111-236-B2557-02	25 Sep 2019	NA
Chemical Waste Producer Registration (Yau Ma Tei Construction site)	5213-225-B2557-05	19 Apr 2021	NA
Chemical Waste Producer Registration (Ma Tau Kok Construction site)	5213-247-B2557-06	19 Apr 2021	NA
Construction Noise Permit			
Construction Noise Permit (Ho Man Tin Construction site)	GW-RE0005-24	14 Jan 2024	13 Mar 2024
Construction Noise Permit (Yau Ma Tei Construction site)	GW-RE0015-24	13 Jan 2024	12 Apr 2024
Construction Noise Permit (Yau Ma Tei Construction site)[1]	GW-RE0182-24	17 Feb 2024	16 May 2024
Construction Noise Permit (Yau Ma Tei Construction site)	GW-RE1606-23	23 Dec 2023	22 Mar 2024
Construction Noise Permit (Ma Tau Kok Construction site)	GW-RE1336-23	04 Nov 2023	03 Feb 2024
Construction Noise Permit (Ma Tau Kok Construction site)[2]	GW-RE0137-24	9 Feb 2024	08 May 2024
Construction Noise Permit (Ma Tau Kok Construction site)	GW-RE1547-23	18 Dec 2023	17 Feb 2024
Construction Noise Permit (Ma Tau Kok Construction site)[3]	GW-RE0171-24	18 Feb 2024	17 Aug 2024
Construction Noise Permit (Kai Tak Barging Point)	GW-RE1526-23	01 Dec 2023	29 Apr 2024
Construction Noise Permit (Sheung Lok Street)	GW-RE1422-23	14 Nov 2023	13 Mar 2024
Construction Noise Permit (Fat Kwong Street TTA)	GW-RE0123-24	2 Feb 2024	29 Feb 2024
Water Discharge License			
Water Discharge License	WT00034873-2019 (Ho Man Tin Construction site)	22 Nov 2019	30 Nov 2024
	WT00035436-2019 (Portion 18)	02 Apr 2020	30 Apr 2025
	WT00037723-2021 (Yau Ma Tei Construction site)	07 Apr 2021	30 Apr 2026
	WT00037883-2021 (Ma Tau Kok Construction site)	30 Apr 2021	30 Apr 2026
	WT00042304-2022 (Sheung Lok Street)	13 Oct 2022	31 Oct 2027
	WT10001427-20233 (Ma Hang Chung Road)	4 Dec 2023	31 Dec 2028

Notes:

[1] GW-RE0015-24 was superseded by GW-RE0182-24 since 17 February 2024.
[2] GW-RE1336-23 was superseded by GW-RE0137-24 since 9 February 2024.
[3] GW-RE1547-23 was superseded by GW-RE0171-24 since 18 February 2024.

2 ENVIRONMENTAL MONITORING REQUIREMENTS

2.1 Construction Dust and Noise Monitoring Locations

2.1.1 Three construction dust monitoring locations and five construction noise monitoring locations pertinent to the Project have been identified based on the approved EM&A Manual for the Project. The locations of the construction dust and noise monitoring stations are summarized in **Table 2.1** as displayed in **Figures 2.1 - 2.3**.

Table 2.1 Construction Dust and Noise Monitoring Locations

Dust Monitoring Station ID	Noise Monitoring Station ID	Monitoring Location
M-A3	M-N3	SKH Tsoi Kung Po Secondary School
/	E-N12a	19 Hing Yan Street
E-A14a	E-N21a	Block B of Merit Industrial Centre
W-A6	/	Man Cheong building
/	W-N18	Hydan Place
/	W-N25A	Prosperous Garden Block 1

Notes:
1. The dust and noise monitoring stations proposed in the EM&A Manual for M-A6/ M-N6 (i.e. Ko Fai House, Kwun Fai Court) was not available for impact dust and noise monitoring, therefore impact monitoring was conducted at M-A3/ M-N3 as an alternative which was agreed by the ER, IEC and EPD;
2. The noise monitoring station proposed in the EM&A Manual for E-N12 (i.e. Grand Waterfront Tower 3) was not available for impact dust and noise monitoring, therefore impact monitoring was conducted at E-N12a as an alternative which was agreed by the ER, IEC and EPD;
3. The dust and noise monitoring stations proposed in the EM&A Manual for E-A14 (i.e. Wyler Gardens) and E-N21 (i.e Hang Chien Court Block J) was not available for impact dust and noise monitoring, therefore impact monitoring was conducted at E-A14a/ E-N21a as an alternative which was agreed by the ER, IEC and EPD;
4. The dust monitoring stations proposed in the EM&A Manual for W-A5 (i.e. The Coronation) was not available for impact dust monitoring, therefore impact monitoring was conducted at W-A6 as an alternative which was agreed by the ER, IEC and EPD.

2.1.2 The last impact monitoring conducted by ET of Contract HY/2018/08 at M-A3/ M-N3 was on 27 December 2023. Impact monitoring at M-A3/ M-N3 was subsequently conducted by Environmental Team of Contract HY/2019/13 since January 2024 **(Figure 2.1).**

2.1.3 The construction dust and noise monitoring locations at M-A3 and M-N3 are covered by Contract No. HY/2019/13 Central Kowloon Route – Buildings, Electrical and Mechanical Works. The monitoring results at M-A3 and M-N3 are presented in the monthly EM&A Report prepared by Contract No. HY/2019/13.

2.1.4 The construction dust and noise monitoring locations at E-A14a, E-N12a and E-N21a are now covered by Contract No. HY/2014/07 Central Kowloon Route – Kai Tak West. The monitoring results at E-A14a, E-N12a and E-N21a in the reporting month are presented in the monthly EM&A Report prepared by Contract No. HY/2014/07.

2.1.5 The construction dust and noise monitoring locations at W-A6, W-N18 and W-N25A are now covered by Contract No. HY/2014/08 Central Kowloon Route –Yau Ma Tei East. The monitoring results at W-A6, W-N18 and W-N25A in the reporting month are presented in the monthly EM&A Report prepared by Contract No. HY/2014/08.

2.2 Construction Dust Monitoring

Monitoring Requirement

2.2.1 In accordance with the approved EM&A Manual, 1-hour and 24-hour Total Suspended Particulates (TSP) levels should be measured at the designated air quality monitoring stations to indicate the impacts of construction dust on air quality. Regular Impact 24-hour TSP monitoring should be carried out for at least once every 6 days, and 1-hour TSP monitoring should be done at least 3 times every 6 days when the highest dust impact occurs.

Monitoring Equipment

2.2.2 24-hour TSP air quality monitoring was performed using High Volume Sampler (HVS) deployed at the designated monitoring station. The HVS shall meet all the requirements of the EM&A Manual.

2.2.3 A portable direct reading dust meter was used to carry out the 1-hour TSP monitoring.

2.3 Construction Noise Monitoring

Monitoring Requirement

2.3.1 In accordance with the EM&A Manual, impact noise monitoring should be conducted at the designated noise monitoring stations for at least once a week during the construction phase of the Project. The parameters, frequency and duration of impact noise monitoring is summarized in **Table 2.2**.

Table 2.2 Construction Noise Monitoring Parameters, Frequency and Duration

Parameter	Duration	Frequency
A-weighted equivalent continuous sound pressure level (Leq). L10 and L90 were also recorded	30 minutes	At least once per week

Monitoring Equipment

2.3.2 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.

2.4 Landscape and Visual

2.4.1 As per the EM&A Manual, the landscape and visual mitigation measures shall be implemented and site inspections should be undertaken once every two weeks during the construction period. A summary of the implementation status is presented in **Section 4**.

3 ENVIRONMENTAL MONITORING RESULTS

3.1 Construction Dust Monitoring

3.1.1 The last impact monitoring conducted by ET of Contract HY/2018/08 was on 27 December 2023. Impact monitoring at M-A3 was subsequently conducted by Environmental Team of Contract HY/2019/13 since January 2024. The monitoring results at M-A3 and M-N3 are presented in the monthly EM&A Report prepared by Contract No. HY/2019/13.

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

3.2 Construction Noise Monitoring

3.2.1 The last impact monitoring conducted by ET of Contract HY/2018/08 was on 27 December 2023. Impact monitoring at M-N3 was subsequently conducted by Environmental Team of Contract HY/2019/13 since January 2024. The monitoring results at M-A3 and M-N3 are presented in the monthly EM&A Report prepared by Contract No. HY/2019/13.

3.2.2 Four (4) Action Level exceedance was recorded for construction noise due to the noise-related complaints received in the reporting month. No Limit Level exceedance was recorded for construction noise monitoring in the reporting month.

3.3 Waste Management

3.3.1 Auditing of waste management practices during regular site inspections confirmed that the waste generated during construction were properly, stored, handled and disposed of in general. The Contractor was responsible for the implementation of any mitigation measures to reduce waste or redress issues arising from the waste materials.

3.3.2 The implemented environmental mitigation measures for the waste management in the reporting period are summarized in **Appendix D**. The summary of observations and recommendations made for waste management during the site inspections are presented in **Table 4.1.**

3.3.3 Monthly summary of waste flow table is detailed in **Appendix F**.

3.4 Landscape and Visual

3.4.1 Bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted on 14 and 27 February 2024. The implementation the landscape and visual mitigation measures in the reporting period are summarized in **Appendix D**. The summary of observations and recommendations made for landscape and visual mitigation measures during the site inspections are presented in **Table 4.1**.

3.4.2 The Event and Action Plan for landscape and visual during construction phase is given in **Appendix C**.

4 ENVIRONMENTAL SITE INSPECTION AND AUDIT

4.1.1 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 status is provided in **Appendix D**.

4.1.2 In the reporting month, five site inspections were carried out on 6 (with IEC), 14, 20 and 27 February 2024. Details of observations recorded during the site inspections are presented in **Table 4.1**.

Table 4.1 Observations and Recommendation of Site Inspection in the Reporting Period

Environmental Aspect	Date	Observations, Reminders, and Recommendations	Follow-up Actions
Air Quality	14 February 2024	Contractor was reminded to carry out water spraying regularly to prevent spreading of dust.	Nil
Noise	Nil	Nil	Nil
Water Quality	6 February 2024	Contractor was reminded to request maintenance for the monitor showing pH value of wastewater treatment plant and ensure the wastewater treatment plant to work properly while pending for maintenance.	Contractor has contacted supplier and the wastewater treatment plant is pending for maintenance.
Waste Management	14 February 2024	Contractor was reminded to collect and remove general waste from the site regularly.	Nil
Landscape and Visual	Nil	Nil	Nil
Permit/ Licenses	Nil	Nil	Nil

5 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

5.1 Complaint Handling, Prosecution and Public Engagement

5.1.1 All complaints received in the last reporting month were finalized.

5.1.2 Four (4) noise-related complaint (i.e. 17th, 20th 26th and 28th February 2024) were received in the reporting month.

5.1.3 The complaint cases in February 2024 are summarized in **Table 5.1**.

Table 5.1 Environmental Complaints Log

Complaint Log No.	Date of Complaint	Received From	Nature of Complaint	Status
EC184_CKRCT20240217_766	17th February 2024	The Contractor Hotline	Nighttime Noise	Under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.
EC185_CKRCT20240220_767	20rd February 2024	1823	Daytime and Nighttime Noise	Under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.
EC186_CKRCT20240226_768	26th February 2024	1823	Nighttime Noise	Under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.
EC187_CKRCT20240228_769	28th February 2024	The Contractor Hotline	Nighttime Noise	Under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.

5.1.4 Cumulative complaint log, summaries of complaints, notification of summons and successful prosecutions are presented in **Appendix E**.

5.1.5 No public engagement activities were conducted in the reporting period.

5.2 Summary of Environmental Non-Compliance

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

5.3 Summary of Monitoring Exceedance

5.3.1 The last impact monitoring conducted by ET of Contract HY/2018/08 at M-A3/ M-N3 was on 27 December 2023. Impact monitoring at M-A3/ M-N3 was subsequently conducted by Environmental Team of Contract HY/2019/13 since January 2024. The monitoring results at M-A3 and M-N3 are presented in the monthly EM&A Report prepared by Contract No. HY/2019/13.

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

5.3.3 Four (4) Action Level exceedance was recorded for construction noise due to the noise-related complaints received in the reporting month. No Limit Level exceedance was recorded for construction noise monitoring in the reporting month.

6 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURE

6.1.1 The Contractor had 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 D**. Status of required submissions under the EP during the reporting period is summarised in **Table 6.1**.

Table 6.1 Status of Required Submission under Environmental Permit

EP Condition	Submission	Submission Date
3.4	Monthly EM&A Report (January 2024)	6 February 2024

7 FUTURE KEY ISSUES

7.1.1 The main works will be anticipated in the next reporting period are as follow:

Ho Man Tin[1]

- Underbreak scaling and smoothing works;
- Invert, lining and OHVD construction.

Yau Ma Tei

- Underbreak scaling and smoothing works;
- Plant and material lifting;
- Invert, lining and OHVD construction;
- Mucking out from tunnel;
- Road slab and invert slab construction;
- Waterproofing work;
- Cut and cover construction.

Ma Tau Kok

- Underbreak scaling and smoothing works;
- Plant and material lifting;
- Invert, lining and OHVD construction;
- Mucking out from tunnel;
- Road slab and invert slab construction;
- Waterproofing work;
- Cut and cover construction

Kai Tak Barging Point

- Material storage.

Ma Hang Chung Road

- Concreting.

Note:
[1] Construction Work at Ho Man Tin site surface was substantially completed. The site had been handed over to Contract No. HY/2019/13 on 30 December 2023.

7.1.2 The recommended mitigation measures corresponding to the main works in the next reporting period are listed as follows:

- Good relationship shall be maintained with the nearby sensitive receivers/ stakeholders which may be affected by the construction works such as providing better/ more detail information of the work nature and inform in advance of the works to the nearby residents;
- Any excavated, stockpile of dusty material or load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious sheeting;
- All construction plants / machineries should be checked / serviced on a regular basis during the courses of construction to minimize the emission of noise generation and eliminate dark smoke emission;
- All C&D materials generated should be transported and stored at temporary storage area. Suitable materials should be sorted for reuse on-site;
- Every vehicle shall be cleaned thorough at the designated wheel washing area onsite;
- Wastewater generated from drilling shall be properly collected for reuse or treated by wastewater treatment facilities before discharge;
- Provision of drip trays for equipment likely cause spillage of chemical / fuel, and provide routine maintenance;
- Erecting temporary noise barrier for noisy Powered Mechanical Equipment (PME) and deployment of Quality Powered Mechanical Equipment (QPME) as many as practicable;
- Conditions in the Environmental Permit and License should be followed;
- All recommended mitigation measures specified in the approved EIA Report and EM&A Manual shall be implemented.
- All vehicles should be cleaned before leaving the construction site to ensure no muddy deposited by them on roads.

8 CONCLUSION AND RECOMMENDATIONS

8.1.1 The 54th Monthly EM&A Report for the Contract No. HY/2018/08 Central Kowloon Route – Central Tunnel summarized the monitoring results and audits findings of the EM&A programme under the issued EP (EP No.: EP-457/2013/D) and in accordance with the EM&A Manual during the reporting period from 01/02/2024 to 29/02/2024.

8.1.2 No construction noise monitoring was conducted in the reporting month as the site had been handed over to Contract No. HY/2019/13 on 30 December 2023. Impact monitoring at M-A3/ M-N3 has been conducted by Environmental Team (HY/2019/13) since January 2024.

8.1.3 Four (4) Action Level exceedance was recorded for construction noise due to the noise-related complaints received in the reporting month. No Limit Level exceedance was recorded for construction noise monitoring in the reporting month. No Action and Limit Level exceedance was recorded for construction dust monitoring in the reporting month.

8.1.4 Weekly environmental site inspections were conducted during the reporting period. In general, the Contractor had implemented environmental mitigation measures and requirements as stated in the EIA Report, the EP and EM&A Manual.

8.1.5 All complaints received in the last reporting month were finalized.

8.1.6 Four (4) noise-related complaint (i.e. 17th, 20th, 26th and 28th February 2024) were received in the reporting month. All complaints are under investigation and will be reported in the subsequent reporting month.

8.1.7 No environmental related prosecutions or notification of summons were received in the reporting period.

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

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

Air Quality Impact

- Contractor was reminded to carry out water spraying regularly to prevent spreading of dust on 14th February 2024.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- Contractor was reminded to request maintenance for the monitor showing pH value of wastewater treatment plant and ensure the wastewater treatment plant to work properly while pending for maintenance on 6th February 2024. Contractor has contacted supplier and the wastewater treatment plant is pending for maintenance.

Waste Management

- Contractor was reminded to collect and remove general waste from the site regularly on 14th February 2024.

Landscape and Visual Impact

- No specific observation was identified in the reporting month.

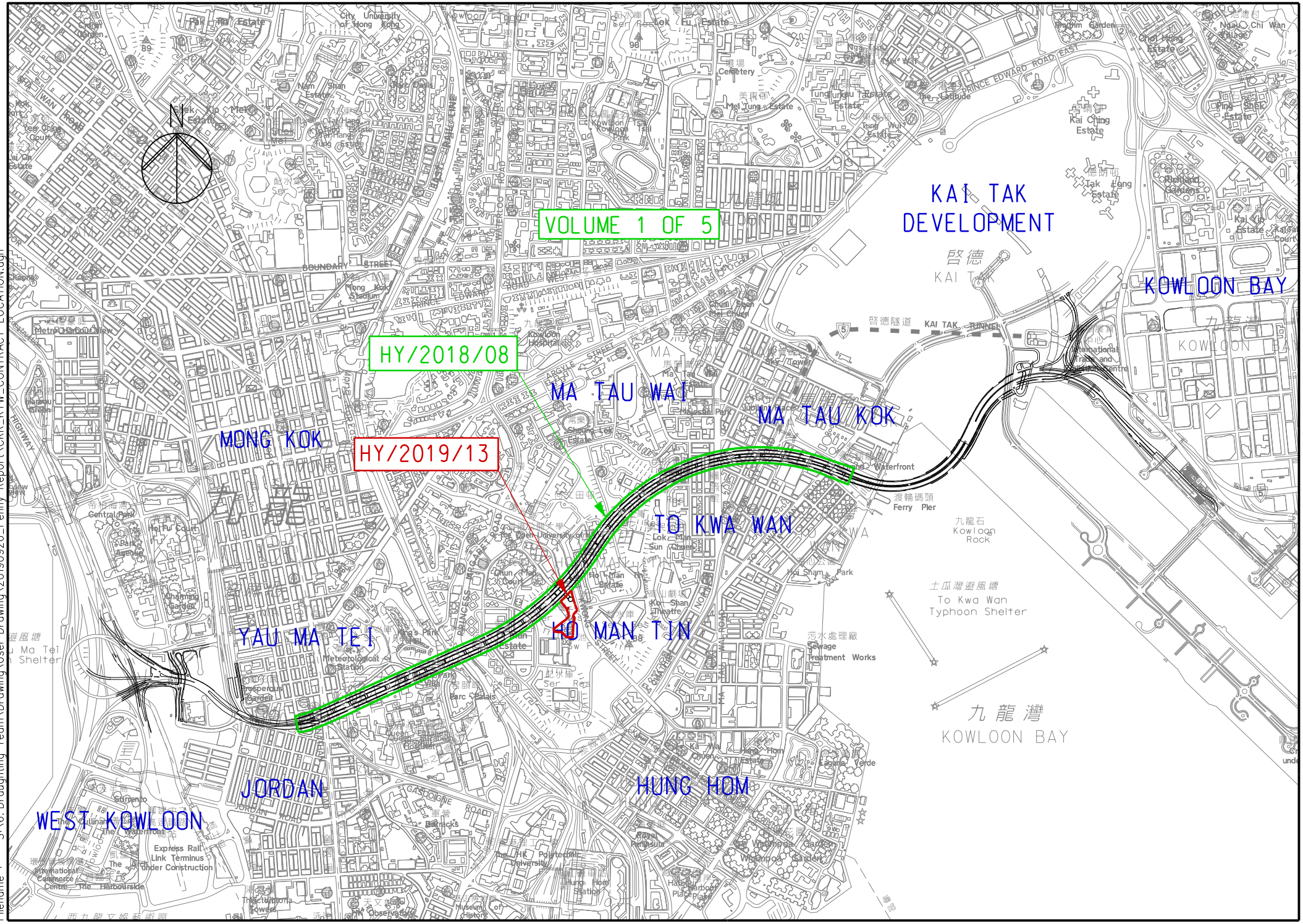
Permit/ Licenses

- No specific observation was identified in the reporting month.

Figure 1

The Site Layout Plan of the

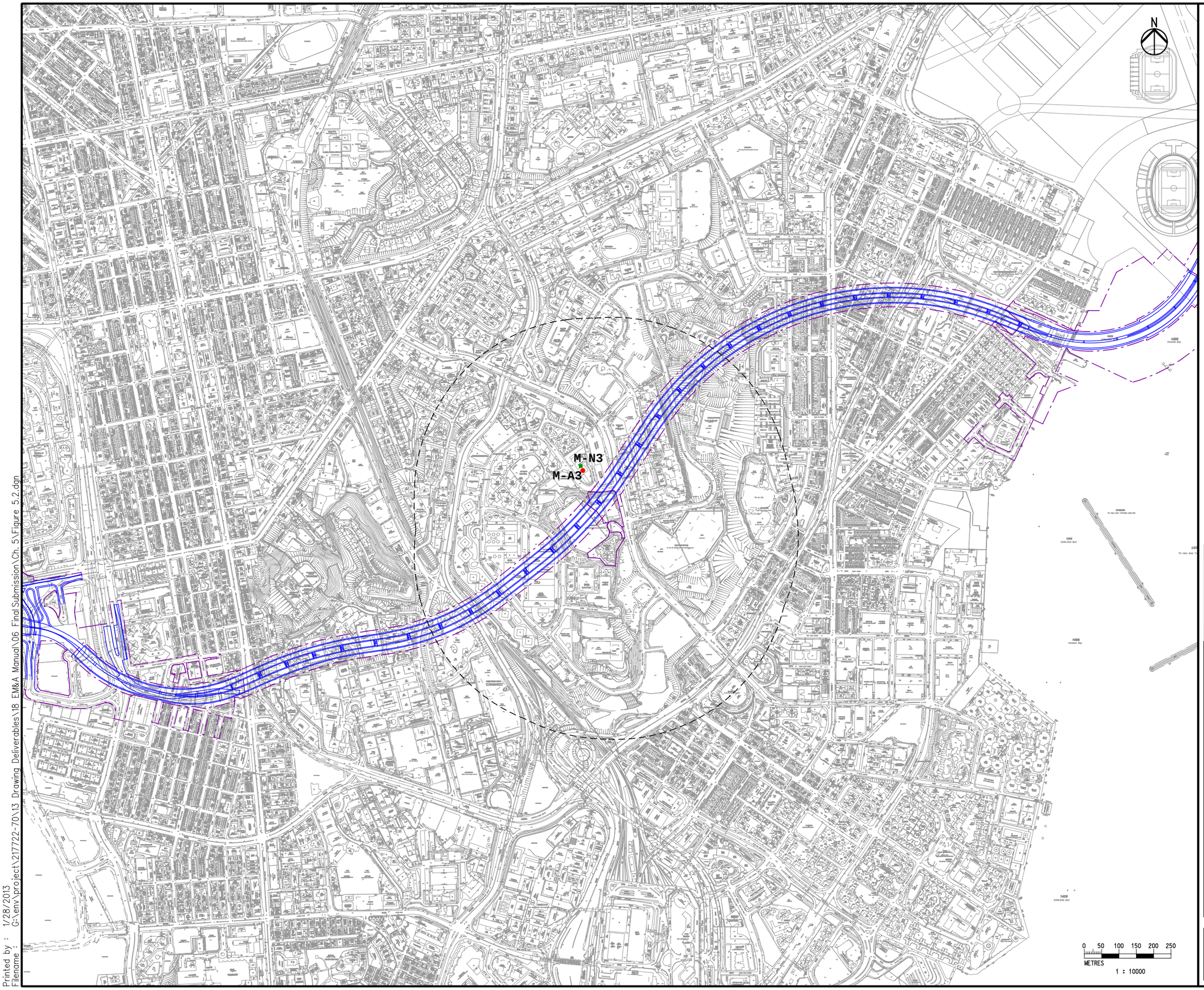
Contract



Printed on : 25/01/2024 14:33:54 by mh.leung
Filename : S:\6. Draughting Team\Drawing\User Drawing\20190926_Penny Report\CKR_KTW_CONTRACT LOCATION.dgn

Figure 2.1

The Location of the Construction Dust and Noise Monitoring Stations (Ho Man Tin)



Legend

- Construction Dust Monitoring Station
- CKR Alignment
- CKR Works Limit
- 500 m Study Boundary in the EIA Report
- Construction Noise Monitoring Station

Rev	Description	By	Date
E	FIFTH ISSUE	GL	01/13
D	FOURTH ISSUE	GL	12/12
C	THIRD ISSUE	GL	09/12
B	SECOND ISSUE	GL	01/12
A	FIRST ISSUE	GL	12/11

Consultant

ARUP Mott MacDonald

Project title

Agreement No. CE 43/2010 (HY)

Central Kowloon Route - Design and Construction

Drawing title

Location of Construction Dust and Noise Monitoring Stations (Central Portion)

Figure 2.1 Rev. E

Drawn	Date	Checked	Approved
GL	01/13	FC	ST

Scale 1:10000 ON A3 | Status PRELIMINARY

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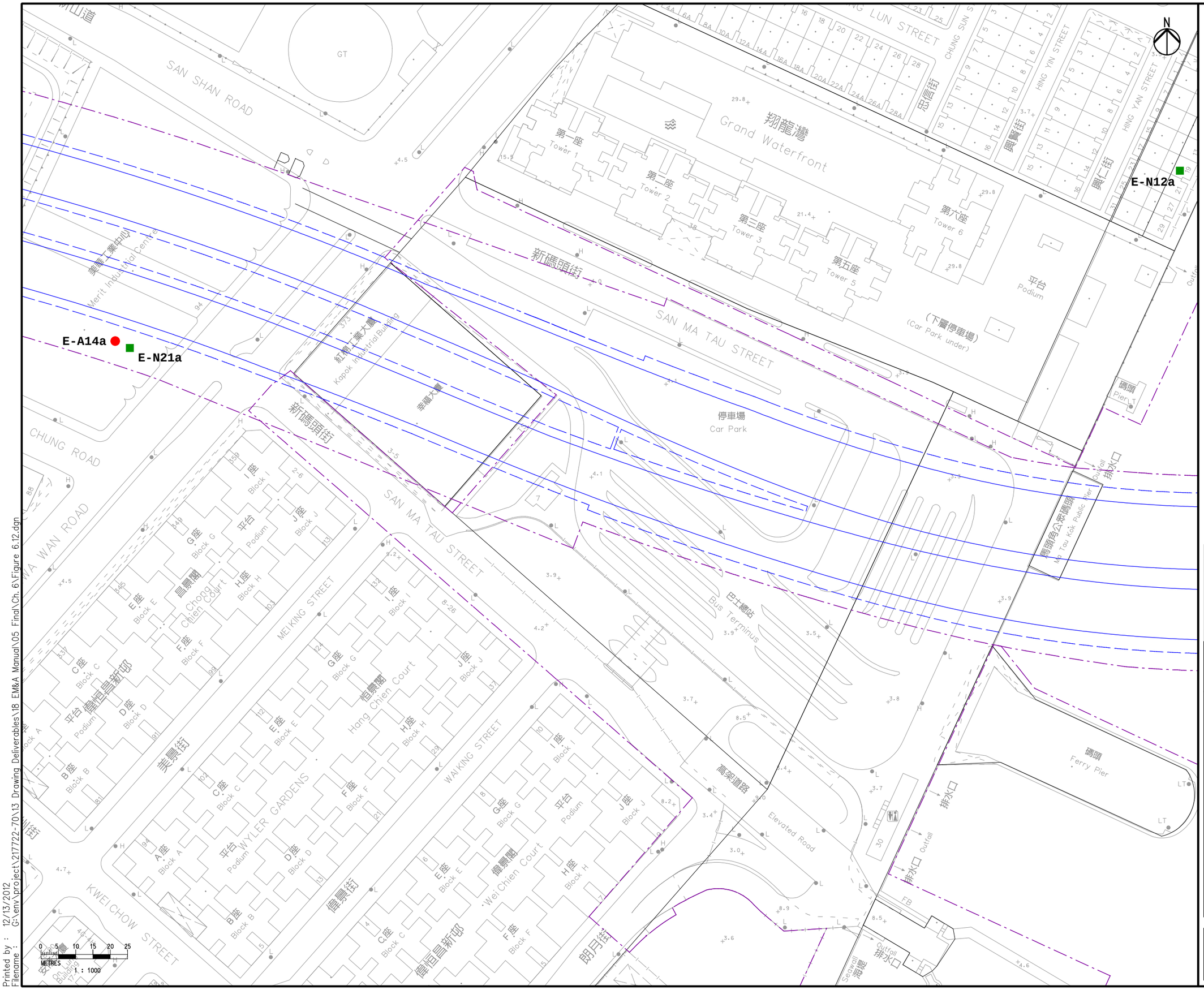
Printed by : 1/28/2013
Filename : G:\env\project\217722-70\13 Drawing Deliverables\18 EM&A Manual\06 Final Submission\Ch. 5\Figure 5.2.dgn

Figure 2.2

The Location of the Construction Dust and Noise Monitoring Stations (Ma Tau Kok)



Legend

- CKR Alignment
- Works Limit
- ● Construction Dust Monitoring Station
- ■ Construction Noise Monitoring Station

Rev	Description	By	Date
D	FOUTH ISSUE	GL	12/12
C	THIRD ISSUE	GL	09/12
B	SECOND ISSUE	GL	06/12
A	FIRST ISSUE	GL	02/12

Consultant: ARUP / Mott MacDonald

Project title: Agreement No. CE 43/2010 (HY)
Central Kowloon Route - Design and Construction

Drawing title: Location of Construction Dust and Noise Monitoring Stations (East Portion)

Figure 2.2 Rev. D

Drawn	Date	Checked	Approved
GL	12/12	FC	ST

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Status: PRELIMINARY

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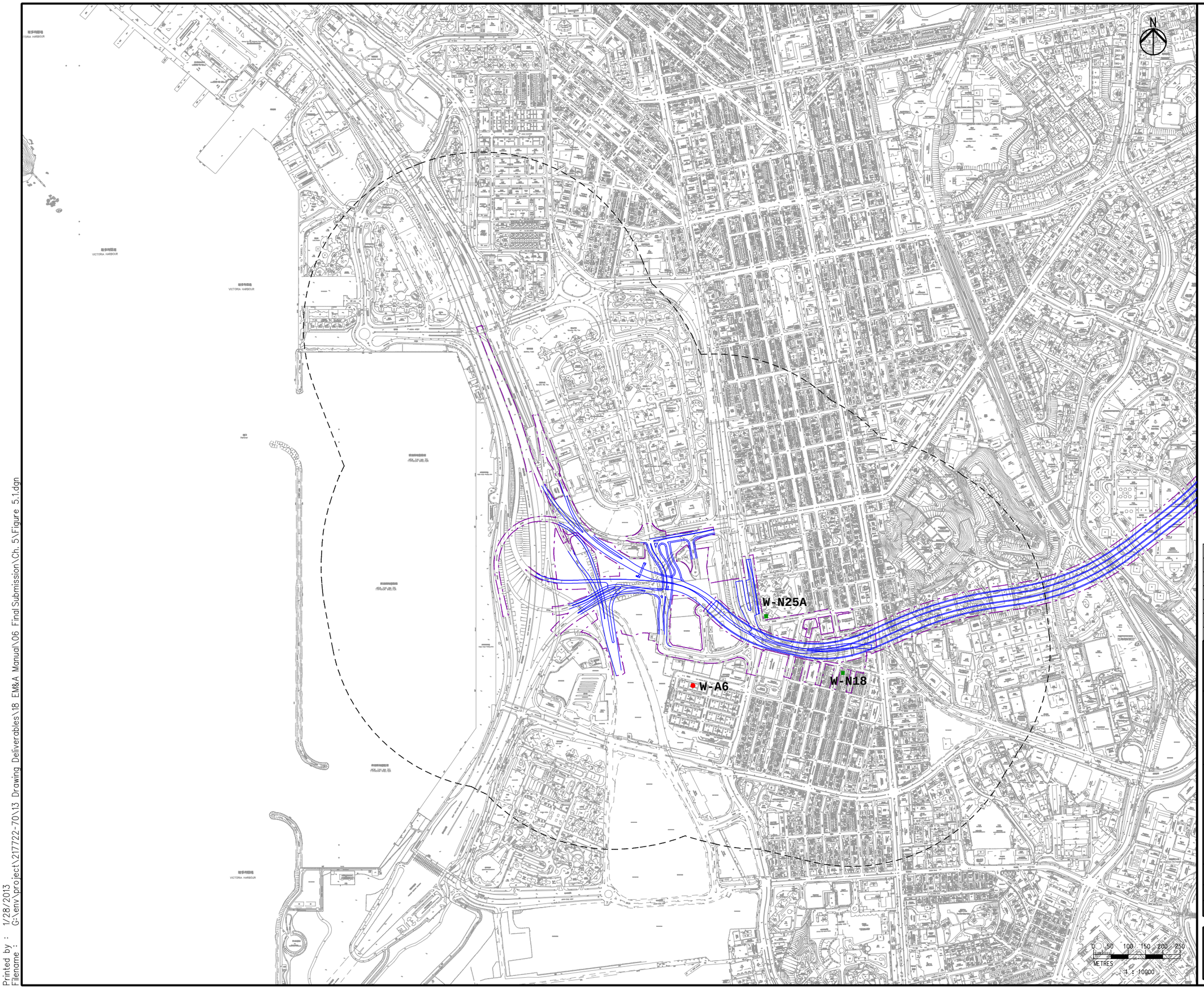
Filename : G:\env\project\217722-70\13 Drawing Deliverables\18 EM&A Manual\05 Final\Ch. 6\Figure 6.12.dgn

Figure 2.3

The Location of the Construction Dust and Noise Monitoring Stations (Yau Ma Tei)



Legend

- Construction Dust Monitoring Station
- CKR Alignment
- CKR Works Limit
- 500m Study Boundary in the EIA Report
- Construction Noise Monitoring Station

Rev	Description	By	Date
E	FIFTH ISSUE	GL	01/13
D	FOURTH ISSUE	GL	12/12
C	THIRD ISSUE	GL	09/12
B	SECOND ISSUE	GL	01/12
A	FIRST ISSUE	GL	12/11

Consultant

ARUP Mott MacDonald

Project title

Agreement No. CE 43/2010 (HY)

Central Kowloon Route - Design and Construction

Drawing title

Location of Construction Dust and Noise Monitoring Stations (West Portion)

Figure 2.3 Rev. E

Drawn	Date	Checked	Approved
GL	01/13	FC	ST

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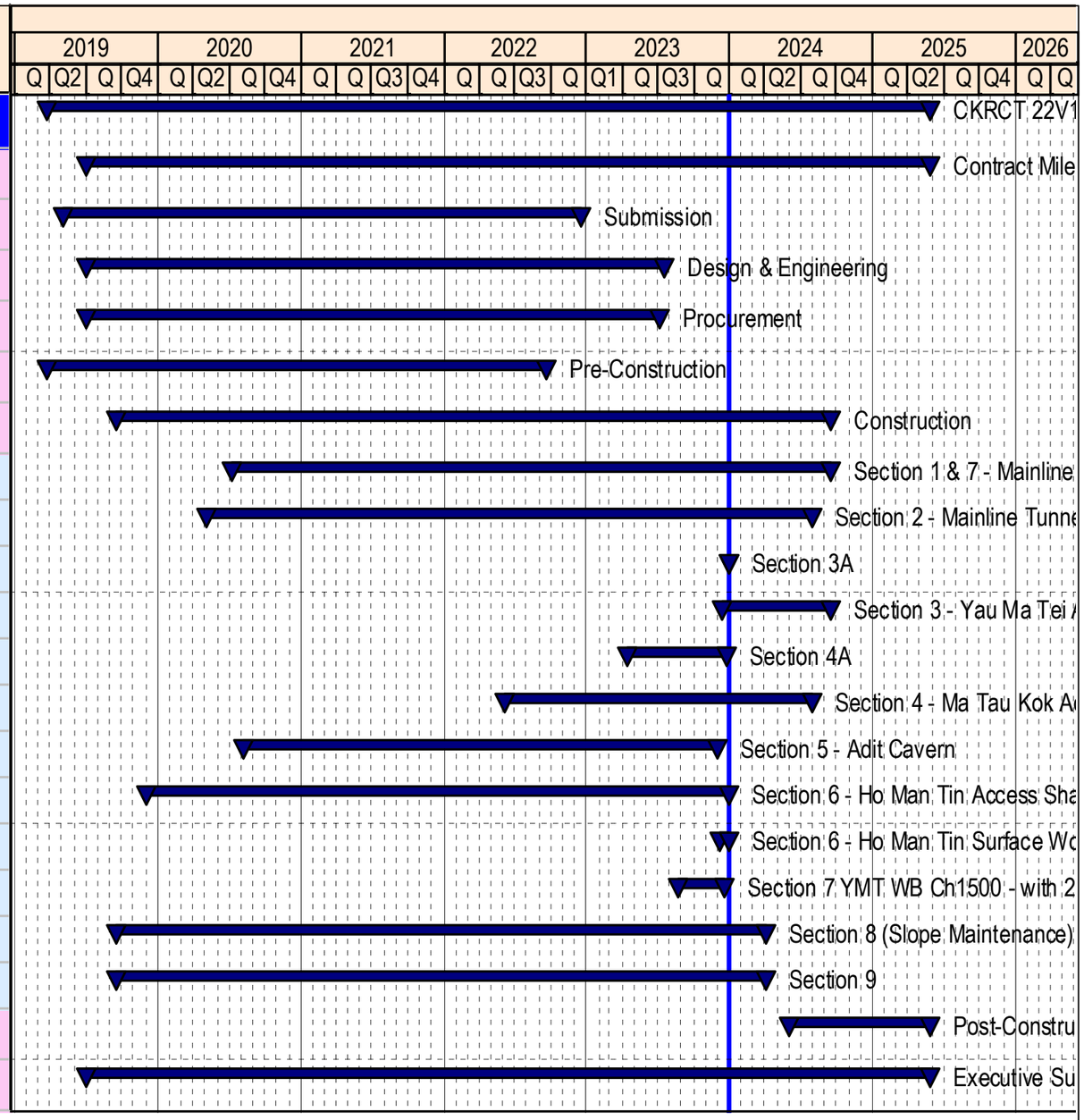
Appendix A

Construction Programme

Activity ID	Activity Name	Dur	Start	Finish
CKRCT 22V1 DD 01Jan24		1806	23-Mar-19 A	30-May-25
Contract Milestones		1726	03-Jul-19 A	30-May-25
Submission		1077	06-May-19 A	19-Dec-22 A
Design & Engineering		1193	03-Jul-19 A	21-Jul-23 A
Procurement		1182	03-Jul-19 A	06-Jul-23 A
Pre-Construction		1033	23-Mar-19 A	19-Sep-22 A
Construction		1456	20-Sep-19 A	16-Sep-24
Section 1 & 7 - Mainline Tunnels YMT to HMT		1221	09-Jul-20 A	16-Sep-24
Section 2 - Mainline Tunnels MTK to HMT		1239	04-May-20 A	31-Jul-24
Section 3A		0	02-Jan-24	02-Jan-24
Section 3 - Yau Ma Tei Access Shaft		215	12-Dec-23 A	16-Sep-24
Section 4A		198	15-Apr-23 A	23-Dec-23 A
Section 4 - Ma Tau Kok Access Shaft		617	08-Jun-22 A	31-Jul-24
Section 5 - Adit Cavern		960	09-Aug-20 A	30-Nov-23 A
Section 6 - Ho Man Tin Access Shaft		1194	02-Dec-19 A	29-Dec-23 A
Section 6 - Ho Man Tin Surface Works		16	09-Dec-23 A	30-Dec-23 A
Section 7 YMT WB Ch1500 - with 2 face Excavation		98	24-Aug-23 A	19-Dec-23 A
Section 8 (Slope Maintenance)		1317	20-Sep-19 A	05-Apr-24
Section 9		1317	20-Sep-19 A	05-Apr-24
Post-Construction		293	04-Jun-24	30-May-25
Executive Summary		1726	03-Jul-19 A	30-May-25



HY/2018/08 Central Kowloon Route Central Tunnel
CKRCT 22V1 DD 01Jan24

BOUYGUES TRAVAUX PUBLICS

Date	Revision	Checked	Approved

Major Construction Activities (Feb 2024)

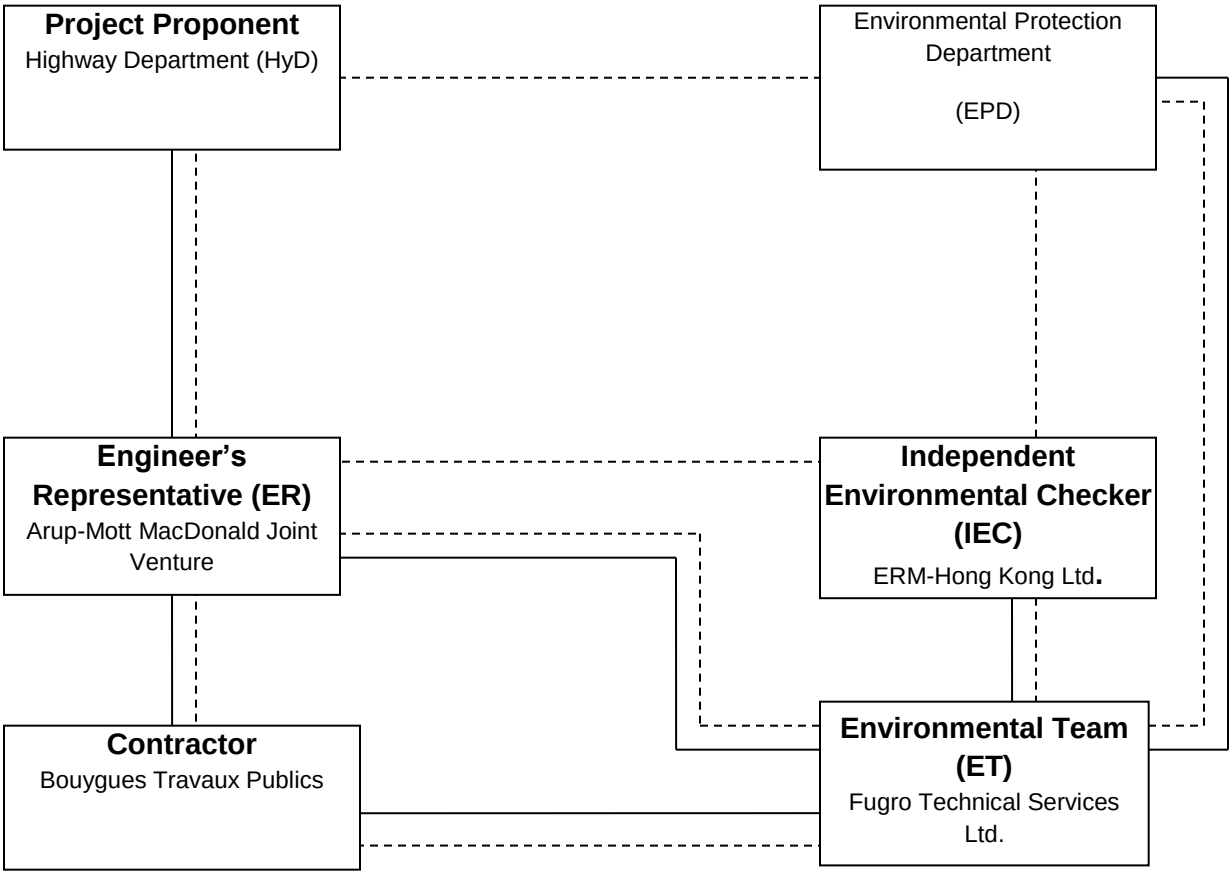
Item	Major Construction Activates	Location
1	Underbreak scaling and smoothing works	HMT
2	Invert, lining and OHVD construction	
3	Road improvement and re-surfacing work	
4	Underbreak scaling and smoothing works	YMT
5	Plant and material lifting	
6	Invert, lining and OHVD construction	
7	Mucking out from tunnel	
8	Road slab and invert slab construction	
9	Waterproofing work	
10	Extension of Noise Enclosure	
11	Cut and cover construction	
12	Underbreak scaling and smoothing works	MTK
13	Plant and material lifting	
14	Invert, lining and OHVD construction	
15	Mucking out from tunnel	
16	Road slab and invert slab construction	
17	Waterproofing work	
18	Cut and cover construction	
19	Material Storage	KTBF
20	Concreting	SLS
21	Concreting	MHC

Major Construction Activities (Mar 2024)

Item	Major Construction Activates	Location
1	Underbreak scaling and smoothing works	HMT
2	Invert, lining and OHVD construction	
3	Underbreak scaling and smoothing works	YMT
4	Plant and material lifting	
5	Invert, lining and OHVD construction	
6	Mucking out from tunnel	
7	Road slab and invert slab construction	
8	Waterproofing work	
9	Cut and cover construction	
10	Underbreak scaling and smoothing works	MTK
11	Plant and material lifting	
12	Invert, lining and OHVD construction	
13	Mucking out from tunnel	
14	Road slab and invert slab construction	
15	Waterproofing work	
16	Cut and cover construction	
17	Material Storage	KTBF
18	Concreting	MHC

Appendix B

Project Organization Chart


Project Proponent
Highway Department (HyD)
Environmental Protection Department
(EPD)
Engineer's Representative (ER)
Arup-Mott MacDonald Joint Venture
Independent Environmental Checker (IEC)
ERM-Hong Kong Ltd.
Contractor
Bouygues Travaux Publics
Environmental Team (ET)
Fugro Technical Services Ltd.
Legend:
Line of Reporting
Line of Communication

Appendix C

Event and Action Plan

Table I-1 Event and Action Plan for Construction Dust Monitoring

EVENT	Action			
	ET	IEC	ER	Contractor
Action Level				
Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and Contractor on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

Table I-1 Event and Action Plan for Construction Dust Monitoring (Continued)

EVENT	Action			
	ET	IEC	ER	Contractor
Limit Level				
Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Table I-2 Event and Action Plan for Construction Noise Monitoring

EVENT	Action			
	ET	IEC	ER	Contractor
Exceedance of Action Level	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Notify IEC and Contractor; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1.Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.
Exceedance of Limit Level	1. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Table I-3 Event and Action Plan for Landscape and Visual during construction phase

EVENT	Action			
	ET	IEC	ER	Contractor
Non-conformity on one occasion	1. Identify source(s); 2. Inform the Contractor, IEC and ER; 3. Discuss remedial actions and preventive measures with IEC, ER and Contractor; 4. Monitor remedial action(s) and preventive measures until rectification has been completed.	1. Check inspection report; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measure(s) and preventive measure(s); 4. Advise ER on effectiveness of proposed remedial measure(s) and preventive measure(s); 5. Check implementation of proposed remedial measure(s) and preventive measure(s).	1. Confirm receipt of notification of non-conformity in writing; 2. Notify the Contractor; 3. Review and agree on the remedial measure(s) and preventive measures proposed by the Contractor; 4. Check implementation of remedial measure(s) and preventive measures.	1. Identify source and investigate the non-conformity; 2. Implement remedial measure(s) and preventive measure(s); 3. Amend working methods agreed with ER as appropriate; 4. Rectify damage and undertake any necessary replacement.
Repeat Non-conformity	1. Identify source(s); 2. Inform Contractor, IEC and ER; 3. Discuss inspection frequency; 4. Discuss remedial action(s) and preventive measures with IEC, ER and Contractor; 5. Monitor remedial action(s) and preventive measure(s) until rectification has been completed; 6. If non-conformity stops, cease any additional monitoring.	1. Check inspection report; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measure(s) and preventive measure(s) 4. Advise ER on effectiveness of proposed remedial measure(s) and preventive measures; 5. Supervise implementation of proposed remedial measure(s) and preventive measure(s).	1. Notify the Contractor; 2. In consultation with the ET and IEC, agree with the Contractor on the remedial measure(s) and preventive; measure(s) to be implemented; 3. Supervise implementation of remedial measure(s) and preventive measure(s).	1. Identify source and investigate the non-conformity; 2. Implement remedial measure(s) and preventive measure(s); 3. Amend working methods agreed with ER as appropriate; 4. Rectify damage and undertake any necessary replacement. Stop relevant portion of works as determined by ER until the non-conformity is abated.

Appendix D

Implementation Status of Environment Mitigation Measures (Construction Phase)

Implement Status of Environment Mitigation Measures (Construction Phase)

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
Air Quality			
S4.3.10	D1	- The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation	Implemented
S4.3.10	D2	- Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road should be conducted to achieve dust removal efficiencies of 91.7%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.3 L/m^2 to achieve the dust removal efficiency.	Implemented
S4.3.10	D3	- Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading;	Implemented
		- Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads;	Implemented
		- A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones;	Implemented
		- 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;	Implemented
		- 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;	Implemented
		- When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided and properly maintained as far as practicable along the site boundary with provision for public crossing;	Implemented
		- The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials;	Implemented
		- 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;	Implemented

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
		- 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	Implemented
S4.3.10	D3	- Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding;	N.O.
		- Any skip hoist for material transport should be totally enclosed by impervious sheeting;	Implemented
		- 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;	Implemented
		- Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed;	N.O.
		- 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	N.O.
		- Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.	N.O.
Noise (Airborne)			
S5.4.1	N1	- Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;	Implemented
		- 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;	Implemented
		- Plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;	Implemented
		- Silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;	N.O.
		- Mobile plant should be sited as far away from NSRs as possible and practicable;	Implemented

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
		- Material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.	N.O.
S5.4.1	N2	- Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Implemented
S5.4.1	N3	- Install movable noise barriers (typical design is wooden framed barrier with a small-cantilevered on a skid footing with 25mm thick internal sound absorptive lining), acoustic mat or full enclosure, screen the noisy plants including air compressors, generators and handheld breakers etc.	Implemented
S5.4.1	N4	- Use "Quiet plants".	Implemented
S5.4.1	N5	- Loading/unloading activities should be carried out inside the full enclosure of mucking out points.	N.O.
S5.4.1	N6	- Sequencing operation of construction plants where practicable.	Implemented
Water Quality			
S6.9.1.1	W1	*Construction Runoff* - At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities;	Implemented
		- The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates;	Implemented
		- The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of - ProPECC PN 1/94, which states that the retention time for silt/sand traps should be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flow rate of 0.1 m^3/s a sedimentation basin of $30m^3$ would be required and for a flow rate of 0.5 m^3/s the basin would be 150 m^3;	Implemented

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
		- All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. Exposed slope surfaces should be covered by tarpaulin or other means;	N.O.
		- The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows, and all traffic areas and access roads protected by coarse stone ballast;	N.O.
		- All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas;	Implemented
		- Measures should be taken to minimize the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;	Implemented
		- Open stockpiles of construction materials (for example, aggregates, sand and fill material) of more than 50m3 should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system;	Implemented
		- Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers;	Implemented
S6.9.1.1	W1	- Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.	Implemented
		- All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains;	Implemented

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
		- Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain;	N.O.
		- Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts;	Implemented
		- All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby;	Implemented
		- All the earth works involving should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable.	Implemented
S6.9.1.2	W2	*Tunnelling Works and Underground Works* - Cut-&-cover tunnelling work should be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September) as far as practicable;	N.O.
		- Uncontaminated discharge should pass through sedimentation tanks prior to off-site discharge;	Implemented
		- The wastewater with a high concentration of SS should be treated (e.g. by sedimentation tanks with sufficient retention time) before discharge. Oil interceptors would also be required to remove the oil, lubricants and grease from the wastewater;	Implemented
S6.9.1.2	W2	- Direct discharge of the bentonite slurry (as a result of D-wall and bored tunnelling construction) is not allowed. It should be reconditioned and reused wherever practicable. Temporary storage locations (typically a properly closed warehouse) should be provided on site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.	Implemented
S6.9.1.3	W3	*Sewage Effluent* - Portable chemical toilets and sewage holding tanks are recommended for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	Implemented
S6.9.1.5	W4	*Groundwater from Potential Contaminated Area* - No direct discharge of groundwater from contaminated areas should be adopted;	N.O.

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
		- A discharge license under the WPCO through the Regional Office of EPD for groundwater discharge should be applied. Prior to the excavation works within these potentially contaminated areas, the groundwater quality should be reviewed during the process of discharge license application. The compliance to the Technical Memorandum on Standards for Effluents Discharged into Drainage on Sewerage Systems, Inland and Coastal Waters (TM-DSS) and the existence of prohibited substance should be confirmed. If the review results indicated that the groundwater to be generated from the excavation works would be contaminated, the contaminated groundwater should be either properly treated in compliance with the requirements of the TM-DSS or properly recharged into the ground;	N.O.
		- If wastewater treatment is deployed, the wastewater treatment unit shall deploy suitable treatment process (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (e.g. TPH) to undetectable range. All treated effluent from wastewater treatment plant shall meet the requirements as stated in TM-DSS and should be discharged into the foul sewers;	N.O.
		- If groundwater recharging wells are deployed, recharging wells should be installed as appropriate for recharging the contaminated groundwater back into the ground. The recharging wells should be selected at places where the groundwater quality will not be affected by the recharge operation as indicated in the Section 2.3 of TM-DSS.	N.O.
S6.9.1.6	W6	*Accidental Spillage* - All the tanks, containers, storage area should be bunded and the locations should be locked as far as possible from the sensitive watercourse and stormwater drains;	Implemented
		- The Contractor should register as a chemical waste producer if chemical wastes would be generated. Storage of chemical waste arising from the construction activities should be stored with suitable labels and warnings. Disposal of chemical wastes should be conducted in compliance with the requirements as stated in the Waste disposal (Chemical Waste) (General) Regulation.	Implemented
Waste Management			
S7.4.1	WM1	*On-site sorting of C&D materials* - Geological assessment should be carried out by competent persons on site during excavation to identify materials which are not suitable to use as aggregate in structural concrete (e.g. volcanic rock, Aplite dyke rock, etc). Volcanic rock and Aplite dyke rock should be separated at the source sites as far as practicable and stored at designated stockpile areas preventing them from delivering to crushing facilities. The	N.O.

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
		crushing plant operator should also be reminded to set up measures to prevent unsuitable rock from ended up at concrete batching plants and be turned into concrete for structural use. Details regarding control measures at source site and crushing facilities should be submitted by the Contractors for the Engineer to review and agree. In addition, site records should also be kept for the types of rock materials excavated and the traceability of delivery will be ensured with the implementation of Trip Ticket System and enforced by site supervisory staff as stipulated under DEVB TC(W) No. 6/2010 for tracking of the correct delivery to the rock crushing facilities for processing into aggregates. Alternative disposal option for the reuse of volcanic rock and Aplite Dyke rock, etc should also be explored.	
S7.5.1	WM2	*Construction and Demolition Materials* - Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;	Implemented
		- Carry out on-site sorting;	Implemented
		- Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;	Implemented
		- Adopt 'Selective Demolition' technique to demolish the existing structures and facilities with a view to recovering broken concrete effectively for recycling purpose, where possible;	N.O.
		- Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified; and	Implemented
		- Implement an enhanced Waste Management Plan similar to ETWBTC (Works) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&D materials and to minimize their generation during the course of construction.	Implemented
S7.5.1	WM3	*C&D Waste* - Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage;	Implemented

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
		- The Contractor should recycle as much of the C&D materials as possible on-site. Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.	Implemented
S7.5.1	WM5	<u>*Land-based Sediment*</u> - All construction plant and equipment shall be designed and maintained to minimize the risk of silt, sediments, contaminants or other pollutants being released into the water column or deposited in the locations other than designated location;	Implemented
		- Requirement in the ETWB TCW No. 34/2002 shall be followed;	N.O.
		- For Type 3 special disposal treatment, sealing of contaminant with geosynthetic containment before dropping into designated mud pit would be a possible arrangement. A geosynthetic containment method is a method whereby the sediments are sealed in geosynthetic containers and, the containers would be dropped into the designated contaminated mud pit where they would be covered by further mud disposal and later by the mud pit capping at the disposal site, thereby fulfilling the requirements for fully confined mud disposal.	N.A.
S7.5.1	WM6	<u>*Chemical Waste*</u> - Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes;	Implemented
		- Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation;	Implemented
S7.5.1	WM6	- The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated; - Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive	Implemented

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
		- chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD.	
S7.5.1	WM6	*General Refuse* - General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes;	Implemented
		- A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law;	Implemented
		- Aluminium cans are often recovered from the waste stream by individual collectors if they are segregated and made easily accessible. Separate labelled bins for their deposit should be provided if feasible;	Implemented
		- Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor.	N.O.
Land Contamination			
S8.10, S8.12 & Appendix 8.4	LC1	*Remaining SI Works* - The potential for land contamination issues at EBH1 and EBH2 will be confirmed by site investigation after site possession and utility diversion by the construction contractor. Following the completion of the remaining SI works, the Project Proponent would prepare and submit a Second Supplementary CAR/RAP to EPD to present the findings of the SI works and to recommend specific remediation measures, if required. Upon completion of the remediation works, if any, a Remediation Report (RR) would be prepared and submitted to EPD for agreement prior to commencement of the construction works.	N.O.
Hazard to Life			
S9.18	H1	- Blasting activities regarding transport and use of explosives should be supervised and audited by competent site staff to ensure full compliance with the blasting permit conditions.	N.O.
S9.6, para 4	H2	- Detonators shall not be transported in the same vehicle with other Category 1 Dangerous Goods.	N.O.
S9.6, para 8	H3	- The explosives delivery trucks should be approved by Mines Division and should meet the regulatory requirements for transport of explosives.	N.O.

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
S9.10, para 7 and S9.18	H4	- Blast doors should be provided for tunnels and blast cover should be provided for shaft at HMT, and kept closed during blasting. Provision of blast doors or heavy duty blast curtains should be implemented at the shafts, adits and other suitable locations to prevent flyrock and control the air overpressure.	N.O.
S9.18	H5	- Only the required quantity of explosives for a particular blast should be transported to avoid the return.	N.O.
S9.18	H6	- Maximum instantaneous charge (MIC) should be within the MIC as specified for the given section.	N.O.
S9.18	H7	- The approved truck dedicated for transport of explosives should comply with the "Guidance Note on Requirements for Approval of an Explosives Delivery Vehicle" issued by CEDD Mines Division. The truck should be periodically inspected and properly maintained in good operation conditions. The fuel carried in the fuel tank should be minimized to reduce the duration of fire. Adequate fire-fighting equipment shall be provided, inspected and replaced periodically (e.g. fire extinguishers).	N.O.
S9.18	H8	- The driver and his assistant should be physically healthy, experienced and have good safe driving records. The driver should hold a proper driving license for the approved transport truck. Dedicated training programme and regular road safety briefing sessions / workshops should be provided to enhance their safe driving attitude and practice. Smoking should be strictly prohibited.	N.O.
S9.18	H9	- Emergency response plans in case of road accident should be prepared and implemented. The driver and his assistant should be familiar with the emergency procedures including evacuation, and proper communication / fire-fighting equipment should be provided to the driver and his assistant.	Implemented
S9.18	H10	- Close liaison and communication among Mines Division, contractors for transport of explosives, and working staff of the tunnel blasting should be established. In case of any change of work schedule leading to cancellation or variation of explosives required, relevant parties should be informed in time to avoid unused explosives at the work sites.	Implemented
S9.18	H11	- Close liaison and communication with Fire Services Department should be established to reduce the accidental detonation escalated from a fire. The contractors for transport of explosives should use the preferred transport routes as far as practicable.	Implemented
S9.18	H12	- Contingency plan should be prepared for transport of explosives under severe weather conditions such as rainstorms and thunderstorms.	Implemented
S9.18	H13	- For explosive transport, all packages of explosives on the truck should be properly stored in the truck compartment as required. Packaging of the explosives should remain intact (i.e. damage free) until they are transferred to the blasting site.	N.O.

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
S9.18	H14	- Availability of a parking space should be ensured before commencement of transport of explosives. Location for loading and unloading of explosives should be as close as possible to the shaft or the adit. No hot work should be performed in the vicinity during the time of loading and unloading.	N.O.
S9.18	H15	- Good communication and coordination should be performed for safe blasting of different chainage locations on the same day.	N.O.
S9.18	H16	- Evacuation and secure refugee areas should be implemented / provided to the working staff.	N.O.
S9.18	H17	- Healthy competent licensed shotfirers and blasting engineers should be employed to conduct the blasting work.	N.O.
S9.18	H18	- Proper control measures should be enforced during explosive transport within the tunnel and charging the blast holes, such as speed limit for the truck, no hot work in the vicinity, etc.	N.O.
S9.18	H19	- Ground vibrations of the blasting operation should be monitored and MICs should be adjusted according to the actual geotechnical features to ensure blasting vibrations within the specified PPV limit.	N.O.
S9.18	H20	- For tunnel blasting near gas facilities, requirement of the "Gas Production and Supply Code of Practice - Avoiding Danger from Gas Pipes" should be respected. Close liaison and coordination with HKCG should be established to provide sufficient notice of the planned blasting activities in an appropriate format within a reasonable time period prior to blasting. Emergency response procedures should be prepared and implemented in case of gas leaks.	N.O.
S9.18	H21	- For tunnel blasting near MTRC railway tunnels, close liaison and coordination with MTRC should be established to provide sufficient notice of the planned blasting activities in an appropriate format within a reasonable time period prior to blasting. Emergency response procedures should be prepared and implemented in case of any damage to the railway facilities.	N.O.
S9.18	H22	- It is recommended to explore to minimize the use of the cartridged emulsion explosives and maximize the use of bulk emulsion explosive as far as practicable.	N.O.
S9.18	H23	- The use of bulk emulsion where the maximum instant charge (MIC) envisaged for a particular blast is above 0.5kg. This prevents the occurrence of excessive vibrations due to potential bulk emulsion dosing inaccuracy in the case of low MIC. It is recommended to explore the bulk emulsion dosing technology so as to maximize the use of bulk emulsion explosive as far as practicable.	N.O.
S9.18	H24	- It is recommended to explore to use smaller explosive charges such as 'cast boosters' or 'mini-cast booster' instead of cartridged emulsion as primers for bulk emulsion. This is option reduces the quantity of explosives required for transportation for the sections where bulk emulsion will be used.	Implemented

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
S9.18	H25	- Instrumentation and monitoring plan should be submitted to all relevant stakeholders for agreement prior to the commencement of the tunnel blasting works. Such plan should be implemented during construction of CKR tunnels.	Implemented
S9.18	H26	- Contingency plan should be submitted to all relevant stakeholders for agreement prior to the commencement of the tunnel blasting works.	Implemented
Landscape and Visual			
S10.10.1, Table 10.11	LV3	*Good Site Management* - Large temporary stockpiles of excavated material shall be covered with unobtrusive sheeting to prevent dust and dirt spreading to adjacent landscape areas and vegetation, and to create a neat and tidy visual appearance. Construction plant and building material shall be orderly and carefully stored in order to create a neat and tidy visual appearance.	N.O.
S10.10.1, Table 10.11	LV4	*Screen Hoarding* - Decorative screen hoarding should be erected to screen the public from the construction area. It should be designed to be compatible with the existing urban context.	N.O.
S10.10.1, Table 10.11	LV5	*Lighting Control during Construction* - All lighting in the construction site shall be carefully controlled to minimize light pollution and night-time glare to nearby residencies and GIC. The contractor shall consider other security measures, which shall minimize the visual impacts.	Implemented
S10.10.1, Table 10.11	LV6	*Erosion Control* - The potential for soil erosion shall be reduced by minimizing the extent of vegetation disturbance on site and by providing a protective cover over newly exposed soil.	N.O.
S10.10.1, Table 10.11	LV7	*Tree Protection & Preservation* - Carefully protected during construction. Tree protection measures will be detailed at the Tree Removal Application stage and plans submitted to the relevant Government Department for approval in due course in accordance with ETWB TC no. 3/2006.	Implemented
S10.10.1, Table 10.11	LV8	*Tree Transplantation* - For trees unavoidably affected by the Project that have to be removed, where practical transplantation will be chosen as the top priority method of removal. If this is not possible or practical compensatory planting will be provided for trees unavoidably felled (See LV10). For trees unavoidably affected by the	N.O.

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
		Project works that are transplanted, transplantation must be carried out in accordance with ETWBTC 2/2004 and 3/2006.	
S10.10.1, Table 10.11	LV9	*Compensatory Planting* - All felled trees shall be compensated for by planting trees to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Felling Application process under ETWBTC 3/2006. Compensatory tree planting may be incorporated into public open spaces and along roadside amenity areas affected by the construction works and therefore be part of the bigger wider planting plans. Onsite compensation planting is preferred but if necessary, additional receptor sites outside the Works Area shall be agreed separately with Government during the Tree Felling Application process.	N.O.
S10.10.1, Table 10.11	LV10	*Screen Planting* - Tall screen/buffer trees, shrubs and climbers should be planted, in so far as is possible, to soften and screen proposed structures such as roads and central strip, vertical edges and buildings and to enhance streetscape greening effect where appropriate. Indiscriminate use of trees for screening must be avoided and the principle of 'right tree for the right place' must be followed.	N.O.
S10.10.1, Table 10.11	LV11	*Green Roof* - Roof greening is recommended be established on ventilation and administration buildings to reduce exposure to untreated concrete surfaces and particularly mitigate visual impact to VSRs at high levels.	N.O.
S10.10.1, Table 10.11	LV12	*Reinstatement* - All works areas, excavated areas and disturbed areas for tunnel construction and temporary road diversion or any other proposed works shall be reinstated to former conditions or better, with reasonable landscape treatment and to the satisfaction of the relevant Government departments. (Specific mitigation for disturbance to public open space is detailed separately under LV14).	N.O.
S10.10.1, Table 10.11	LV13	*Reprovising of Public Open Space* - All areas of public open space affected by the Project will be reprovisioned either at the same location following the completion of temporary works, or at a separate site, as agreed with relevant Government departments. Open space should be re-provisioned in an enhanced manner.	N.O.
S10.10.1, Table 10.11	LV14	*Landscape enhancement* - Implement a comprehensive landscape plan to maximize the greening opportunity and create a unique landscape for the project to blend in with the surrounding, including in reprovisioned areas. In particular:	N.O.

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
		- landscape enhancement of re-provisioned Public Transport Interchange; - landscape deck on tunnel portals; - viaduct planters for trailer planting.	
Cultural Heritage			
S11.4.4	CH1	- The contractor should be alerted during the construction on the possibility of locating archaeological remains and as a precautionary measure, AMO shall be informed immediately in case of discovery of antiquities or supposed antiquities in the subject sites.	N.A.
S12.6.1, Table 12.2	CH5	*Tin Hau Temple (CKR-02)* - The Alert, Alarm and Action (AAA) vibration limit is recommended to be set at 3/4/5 mm/s and a condition survey shall be carried out by the project proponent prior to the construction phase to confirm this assessment; - Vibration monitoring of the structure shall be employed during the construction phase to ensure that the level is not exceeded. . The monitoring proposal should be sent to AMO for comment.	N.A.
S12.6.1, Table 12.2	CH6	*Kowloon Methodist Church (CKR-10)* - The Alert, Alarm and Action (AAA) vibration limit is recommended to be set at 5/6/7.5 mm/s; - Vibration monitoring of the structure shall be employed during the construction phase to ensure that the level is not exceeded, and as such appropriate vibration monitoring on the building should be complied with as appropriate. The monitoring proposal should be sent to AMO for comment.	N.A.
S12.6.1, Table 12.2	CH7	*Ma Tau Kok Animal Quarantine Depot (CKR-12)* - The Alert, Alarm and Action (AAA) vibration limit is recommended to be set at 5/6/7.5 mm/s; - Vibration monitoring of the structure shall be employed during the construction phase to ensure that the level is not exceeded, and as such appropriate vibration monitoring on the building should be complied with as appropriate. The monitoring proposal should be sent to AMO for comment.	N.A.
S12.6.1, Table 12.2	CH11	*Air raid precaution tunnels of the K1 Network (CKR-14)* - A condition survey for the tunnel network should be undertaken by the project proponent to determine the present condition of the air raid tunnels and to recommend protective measures to ensure that the tunnels are not damaged by the construction works. and as such appropriate vibration monitoring on the building should be complied with as appropriate. The monitoring proposal should be sent to AMO for comment.	N.A.

Remarks:

N.A. Not Applicable at this stage as no such site activities were conducted in the reporting period

N.O. Not Observed during site inspection in the reporting period.

Appendix E

Cumulative Statistics on Exceedances, Complaints, Notifications of Summons and Successful Prosecutions

Table E-1 Environmental Complaints Log

Complaint Log No.	Date of Complaint	Received From	Received By	Nature of Complaint	Investigation/Mitigation Action	Status
EC184_CKRCT20240217_766	17 February 2024	The Contractor's Hotline	The Contractor & Engineer	Nighttime Noise	A complaint was received on 17 February 2024 from resident of Grand Waterfront. The complainant complained about the noise nuisance from the work at Ma Tau Kok Site at nighttime.	Under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.
EC185_CKRCT20240220_767	20 February 2024	1823	The Contractor & Engineer	Daytime and Nighttime Noise	The Contractor was referred a complaint from 1823 on 20 February 2024. The complainant complained about the noise nuisance from the works at Sheung Lok Street carriageway. The complainant requested for rectification.	Under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.
EC186_CKRCT20240226_768	26 February 2024	1823	The Contractor & Engineer	Nighttime Noise	The Contractor was referred a complaint from 1823 on 26 February 2024. The complainant complained about the noise nuisance from the works at Fat Kwong Street carriageway outside Ho Man Tin	Under investigation and the investigation results will be reported in the

Complaint Log No.	Date of Complaint	Received From	Received By	Nature of Complaint	Investigation/Mitigation Action	Status
					Estate.	subsequent Monthly EM&A Report.
EC187_CKRCT20240228_769	28 February 2024	The Contractor's Hotline	The Contractor & Engineer	Nighttime Noise	A complaint was received on 28 February 2024. The complainant complained that concrete truck loading was still carried out at 7:55pm.	Under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.

Table E-2 Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions and Public Engagement Activities

Reporting Period	Complaints	Notifications of Summons and Prosecutions	Public Engagement Activities
This Month	4	0	0
Cumulative Project-to-Date	188	0	0

Table E-3 Cumulative Statistics on Monitoring Exceedance

Monitoring Parameter	Month/Year	No. of Exceedance	
		Action	Limit
1-hour TSP	No. of Exceedance This Month	0	0
	Cumulative Project-to-Date	0	0
24-hour TSP	No. of Exceedance This Month	0	0
	Cumulative Project-to-Date	0	0
Noise (LAeq (30min))	No. of Exceedance This Month	4	0
	Cumulative Project-to-Date	153	0

Note:
No construction noise monitoring was conducted in the reporting month as the site had been handed over to Contract No. HY/2019/13 on 30 December 2023. Impact monitoring at M-A3/ M-N3 has been conducted by Environmental Team (HY/2019/13) since January 2024. The monitoring results at M-A3 and M-N3 are presented in the monthly EM&A Report prepared by Contract No. HY/2019/13.

Appendix F

Waste Flow Table

Monthly Summary Waste Flow Table (2024)

Month	Actual Quantities of Inert C&D Materials Generated Monthly				Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity of Inert C&D Materials Generated[2 3] (A)	Reused in the Contract[3] (B)	Reused in other Projects[3] (C)	Disposed as Public Fill[3] (D)	Metals	Paper/ cardboard packaging	Plastics	Chemical Waste	Others, e.g. general refuse
	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)	(in '000m^3)
Total (2019)	2.284	0.0000	0.0000	2.284	0.0000	0.0000	0.0000	0.0000	0.0358
Total (2020)	130.0518	0.0000	75.3533	54.6985	49.1912	3.1500	0.0219	4.2240	0.2613
Total (2021)	571.1005	0.0000	509.5554	61.5452	0.0842	3.3920	0.0860	25.5200	0.4916
Total (2022)	472.7173	7.9374	320.6842	137.2021	0.0726	3.5310	0.1382	44.9046	0.7432
Total (2023)	478.2085	4.3485	392.8208	81.0391	0.0738	3.1900	0.1374	19.1488	2.5202
Jan	4.1266	0.0000	2.8955	1.2311	0.0065	0.3400	0.0189	0.0000	0.4086
Feb	5.3527	0.0000	1.1942	4.1586	0.0081	0.2000	0.0155	0.0000	0.3571
Mar									
Apr									
May									
Jun									
Sub-Total (2024)	9.4793	0.0000	4.0897	5.3897	0.0146	0.5400	0.0344	0.0000	0.7657
Jul									
Aug									
Sep									
Oct									
Nov									
Dec									
Total (2024)	9.4793	0.0000	4.0897	5.3897	0.0146	0.5400	0.0344	0.0000	0.7657
Total accumulated waste quantity	1185.6329	7.9374	909.6826	261.1195	49.3626	10.6130	0.2805	74.6486	2.2976

Notes:

1. Following assumption is made for calculation:

i) 1m^3 of inert material weight 2.2 tonne;

ii) 1m^3 of non-inert material weight 1.6 tonne;

iii) 1m^3 of chemical waste weight 0.88 tonne;

2. Total Quantity of Inert C&D Materials (A) should reflect total quantities of C&D materials (including rock, broken concrete, soil, asphalt, slurry and bentonite) generated from site;

3. Disposed as Public Fill (D) = Total Quantity of Inert C&D Materials Generated (A) – Reused in the Contract (B) – Reused in other Projects (C).