Vol. 1 of 5

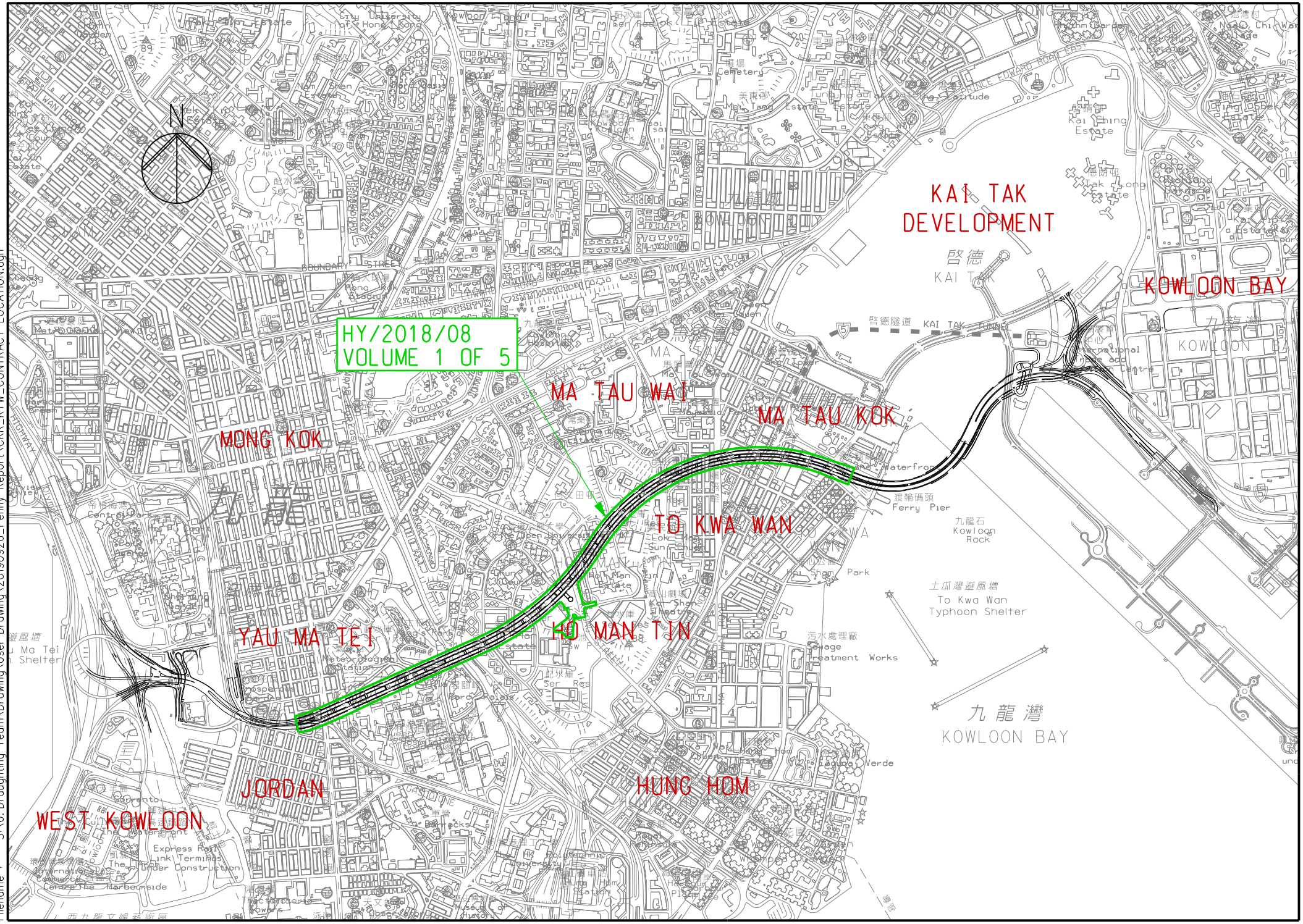
EP-457/2013/D

Central Kowloon Route

Central Tunnel

Contract No. HY/2018/08

September 2022



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Monthly EM&A Report No. 37 (September 2022)

0097/19/ED/0751 02 | 11 October 2022
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.37
Date of Report:	11 October 2022 (Rev. 01)
Date received by IEC:	12 October 2022

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: 12 October 2022

Independent Environmental Checker

Our ref: 0436942_IEC Verification Cert_CT_Monthly EM&A Rpt No.37_20221012.docx

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Initials	Name	Role	Signature
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CL	**Cyrus C.Y. LAI**	**Environmental Team Leader**	

EXECUTIVE SUMMARY

I. Introduction

This is the 37th 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 01/09/2022 to 30/09/2022.

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

- Multi-faces drill and blast excavation;
- Mixed and soft ground excavation;
- Ventilation adit and cavern mechanical excavation;
- TBM tunnel enlargement by blasting;
- Underbreak scaling and smoothing works;
- Waterproofing, lining and invert concreting;
- Modification on ventilation and concrete pipe;
- Mucking out from HMT to MTK;
- Pipe pile wall construction;
- Foundation of tower crane;
- Dismantling of noise enclosure and associated equipment.

Yau Ma Tei

- Drill and break excavation;
- Drill and blast excavation;
- Canopy and arch rib installation;
- Mucking out from tunnel;
- Site and shaft installation.

Ma Tau Kok

- Drill and blast excavation;
- Mucking out from tunnel;
- Site and shaft installation.

Ka Tak Barging Point

- Spoil handling and disposal.

Sheung Lok Street

- Drop hole drilling works;
- Steel casing installation;

- Grouting

III. Summary of Exceedances, Investigation and Follow-up

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

Three (3) Action Level exceedances were 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.

One (1) noise-related complaint was received in the last reporting month (i.e. 27 August 2022). The investigation reports for the complaints were finalized on 11th October 2022.

Three (3) noise-related and one (1) water-related complaints (i.e. 6, 9, and 28 September 2022) were received in the reporting month.

The complaint cases in August and September 2022 are summarized in **Table I**.

Table I Environmental Complaints Log

Complaint Log No.	Date of Complaint	Received From	Nature of Complaint	Status
EC135_CKRCT20220827_520	27th August 2022	Contract Complaint Hotline	Construction Noise	Investigation report was finalized on 11th October 2022.
EC137_CKRCT20220906_525	6th September 2022	Contract Complaint Hotline	Construction Noise	Investigation report was finalized on 12th October 2022
EC138_CKRCT20220909_526	9th September 2022	Contract Complaint Hotline	Construction Noise	Under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.
EC139_CKRCT20220928_529	28th September 2022	Contract Complaint Hotline	Construction Noise	Investigation report was finalized on 12th October 2022
EC140_CKRCT20220928_530	28th September 2022	1823	Muddy water	Investigation report was finalized on 12th October 2022

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

- Multi-faces drill and blast excavation;
- Mixed and soft ground excavation;
- Ventilation adit and cavern mechanical excavation;
- TBM Tunnel enlargement by blasting;
- Underbreak scaling and smoothing works;
- Waterproofing, lining and invert concreting;
- Modification on ventilation and concrete pipe;
- Pipe pile wall construction;
- Dismantling of noise enclosure and associated equipment;
- Erection of Tower Crane

Yau Ma Tei

- Drill and break excavation;
- Drill and blast excavation;
- Canopy and arch rib installation;
- Mucking out from tunnel;
- Site and shaft installation.

Ma Tau Kok

- Drill and blast excavation;
- Mucking out from tunnel;
- Site and shaft installation.

Ka Tak Barging Point

- Spoil handling and disposal.

Sheung Lok Street

- Drop hole drilling works;
- Steel casing installation;
- Grouting

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 (August 2022)	14 September 2022

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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 variations 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 37th 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 01/09/2022 to 30/09/2022.

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. Cyrus Lai	3565 4442

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

- Multi-faces drill and blast excavation;
- Mixed and soft ground excavation;
- Ventilation adit and cavern mechanical excavation;
- TBM tunnel enlargement by blasting;
- Underbreak scaling and smoothing works;
- Waterproofing, lining and invert concreting;
- Modification on ventilation and concrete pipe;
- Mucking out from HMT to MTK;
- Pipe pile wall construction;
- Foundation of tower crane;
- Dismantling of noise enclosure and associated equipment.

Yau Ma Tei

- Drill and break excavation;
- Drill and blast excavation;
- Canopy and arch rib installation;
- Mucking out from tunnel;
- Site and shaft installation.

Ma Tau Kok

- Drill and blast excavation;
- Mucking out from tunnel;
- Site and shaft installation.

Ka Tak Barging Point

- Spoil handling and disposal.

Sheung Lok Street

- Drop hole drilling works;
- Steel casing installation;
- Grouting

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) [1]	GW-RE0448-22	14 May 2022	13 Sep 2022
Construction Noise Permit (Ho Man Tin Construction site)	GW-RE0869-22	29 Aug 2022	13 Oct 2022
Construction Noise Permit (Yau Ma Tei Construction site) [2]	GW-RE0674-22	07 Jul 2022	06 Sep 2022
Construction Noise Permit (Yau Ma Tei Construction site)	GW-RE0871-22	30 Aug 2022	29 Oct 2022
Construction Noise Permit (Ma Tau Kok Construction site)	GW-RE0799-22	04 Aug 2022	03 Feb 2023
Construction Noise Permit (Kai Tak Barging Point) [3]	GW-RE0182-22	08 Mar 2022	02 Sep 2022
Construction Noise Permit (Kai Tak Barging Point)	GW-RE0895-22	03 Sep 2022	02 Dec 2022
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

Notes:
[1] GW-RE0448-22 was superseded by GW-RE0869-22 since 29 August 2022
[2] GW-RE0674-22 was superseded by GW-RE0871-22 since 30 August 2022
[3] GW-RE0182-22 was superseded by GW-RE0895-22 since 03 September 2022

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 construction dust and noise monitoring locations at M-A3 and M-N3 are covered by Contract No. HY/2018/08 Central Kowloon Route – Central Tunnel whereas 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.

2.1.3 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.

2.2.4 The model of the dust monitoring equipment used is summarized in **Table 2.2**.

Table 2.2 Construction Dust Monitoring Equipment

Equipment	Brand	Model	Serial No.
High Volume Sampler (24-hour TSP)	Tisch	TE-5170	4388
Calibrator	Tisch	TE-5025A	2154
Portable direct reading dust meter (1-hour TSP)	Sibata	LD-5R	155717
			620408

Monitoring Methodology for HVS

2.2.5 The following guidelines were adopted during the installation of HVS:

- Sufficient support is provided to secure the samplers against gusty wind.
- No two samplers are placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, is at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses is required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally is required.
- No furnaces or incineration flues are nearby.
- Airflow around the samplers is unrestricted.
- The samplers are more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.
- Permission must be obtained to set up the samplers and to obtain access to the monitoring stations.
- A secured supply of electricity is needed to operate the samplers.

2.2.6 Prior to the commencement of the dust sampling, the flow rate of the high volume sampler shall be properly set. The power supply should be checked to ensure the proper functioning of the sampler. The sampler is recommended to be operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air monitoring station.

2.2.7 The filter holding frame should be removed by loosening the four nuts and placing carefully a weighted and conditioned filter at the centre with the stamped number upwards on a supporting screen.

2.2.8 The filter should be aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. The filter holding frame should be tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.

2.2.9 A programmed timer should be used to control the duration of operation. Information should be recorded on the record sheet, which included the starting time, the weather condition and the filter number.

2.2.10 After sampling process is finished, the filter should be removed and sent to the laboratory for weighting. The elapsed time should also be recorded.

2.2.11 All filters should be equilibrated in a conditioning environment for 24 hours before weighting. 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 and Calibration for HVS

2.2.12 The high volume motors and their accessories should be properly maintained, including routine motor brushes replacement and electrical wiring checking, to ensure that the equipment and a continuous power supply were in good working condition.

2.2.13 Initial calibration of dust monitoring equipment shall be conducted upon installation and thereafter at fortnightly intervals. The transfer standard shall be traceable to the internationally recognized primary standard and be calibrated annually. The calibration certificate for the HVS is provided in **Appendix C**.

Monitoring Methodology for Direct Reading Dust Meter

2.2.14 Portable Laser Particle Photometer Monitors should be operated in accordance with the Manufacturer's instruction Manual as below:

a) Pulling up the air sampling inlet cover
b) Changing the Mode 0 to BG
c) Pressing Start/Stop switch
d) Turning the knob to SENSI.ADJ and press it
e) Pressing Start/Stop switch again
f) Returning the knob to the position MEASURE slowly
g) Pressing the timer set switch to set measuring time
h) Removing the cap and start the measurement

Maintenance and Calibration for Direct Reading Dust Meter

2.2.15 ET shall submit sufficient information to the IEC to prove that the instrument is capable of achieving comparable results to the HVS. The instrument should also be calibrated regularly, and the 1-hour sampling shall be determined periodically by the HVS to check the validity and accuracy of the results measured by direct reading method. The calibration certificate for the direct reading dust meter is provided in **Appendix C**.

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 2.3**.

Table 2.3 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.

2.3.3 The model of the noise monitoring equipment used is summarized in **Table 2.4**.

Table 2.4 Construction Noise Monitoring Equipment

Equipment	Brand	Model	Serial No.
Acoustic Calibrator	Casella	CEL-120/1	5230736
			5230758
Sound Level Meter	Casella	CEL-63X	0873599

Monitoring Methodology

2.3.4 Noise measurement should be conducted as the following procedures:

a) Free field measurements was made at monitoring location M-N3. A correction of +3 dB(A) shall be made to the free field measurements.
b) The battery condition should be checked to ensure good functioning of the meter.
c) Parameters such as frequency weighting, the time weighting and the measurement time should set as follow:

(i) Frequency weighting: A
(ii) Time weighting: Fast
(iii) Measurement time: 30 minutes

d) Prior to and after noise measurement, the meter shall be calibrated using the calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement is more than 1.0 dB, the measurement will be considered invalid and repeat of noise measurement is required after re-calibration or repair of the equipment.
e) The wind speed at the monitoring station shall be checked with the portable wind meter. Noise monitoring should be 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.
f) Noise measurement should be paused during periods of high intrusive noise if possible and observation shall be recorded when intrusive noise is not avoided.
g) At the end of the monitoring period, the Leq, L10 and L90 should be recorded. In addition, site conditions and noise sources should also be recorded on a standard record sheet.

Maintenance and Calibration

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

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

b) The sound level meter and calibrator should be calibrated annually by a HOKLAS laboratory or the manufacturer.

The calibration certificates for noise monitoring equipment are provided in **Appendix D**.

2.4 Construction Dust and Noise Monitoring Schedule

2.4.1 The environmental monitoring schedule for the reporting period is provided in **Appendix E**.

2.5 The Action and Limit Levels

2.5.1 The Action and Limit Levels for construction dust and noise monitoring are provided in **Appendix F**.

2.6 Landscape and Visual

2.6.1 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 monitoring results for 1-hour TSP and 24-hour TSP are summarized in **Table 3.1** and **Table 3.2** respectively. Detailed construction dust monitoring results and daily extract of meteorological observations are presented in **Appendix G**.

3.1.2 The monitoring results at E-A14a and W-A6 are reported in the monthly EM&A Reports prepared by Contract No. HY/2014/07 and Contract No. HY/2014/08 respectively.

Table 3.1 Summary of 1-hour TSP Monitoring Results in the Reporting Period

Station ID	Average (µg/m^3)	Range (µg/m^3)	Action Level (µg/m^3)	Limit Level (µg/m^3)
M-A3	69	53-79	333	500

Table 3.2 Summary of 24-hour TSP Monitoring Results in the Reporting Period

Station ID	Average (µg/m^3)	Range (µg/m^3)	Action Level (µg/m^3)	Limit Level (µg/m^3)
M-A3	36	16-48	153	260

3.1.3 No Action and Limit Level exceedance was recorded for 1-hour TSP monitoring and 24-hour TSP monitoring at the monitoring location in the reporting month.

3.1.4 Major dust sources during the monitoring included nearby traffic emission.

3.1.5 The Event and Action Plan for the construction dust monitoring is given in **Appendix I**.

3.2 Construction Noise Monitoring

3.2.1 The monitoring results for noise are summarized in **Table 3.3** and the monitoring data is given in **Appendix H**.

3.2.2 The monitoring results at E-N12a, E-N21a, W-N18 and W-N25A are reported in the monthly EM&A Reports prepared by Contract No. HY/2014/07 and Contract No. HY/2014/08 respectively.

Table 3.3 Summary of Construction Noise Monitoring Results in the Reporting Period

Station ID	Date	[1]Measured Noise Level, dB(A), Leq (30 mins)	[1 2]Corrected Noise Level, dB(A), Leq (30 mins)	Action Level	Limit Level dB(A), Leq (30 mins)
M-N3	6-Sep-2022	72.0	70.0[3]	When one documented complaint is received	For Schools: 70dB(A) during normal teaching period and 65 dB(A) during examination periods
	14-Sep-2022	67.2	NA		
	20-Sep-2022	67.7	NA		
	26-Sep-2022	68.1	NA		

Notes:

1. Free field noise levels were adjusted with a correlation of +3 dB(A);
2. Corrected Noise Level =10* log (10^ (Measured Noise Level/10) – 10^ (Baseline Noise Level/10)), where the Baseline Noise Level = 67.7 dB(A).

3. The Construction Noise Level on 6 September 2022 is corrected to 70dB(A) based on the formula 10* log(10^(72/10) – 10^(67.7/10))=69.98. Therefore, the noise monitoring level is complied with the noise criteria stipulated in EIAO-TM.

3.2.3 No Limit Level exceedance was recorded for construction noise monitoring at the monitoring location in the reporting month.

3.2.4 Three (3) Action Level exceedances were recorded for construction noise due to the noise-related complaints received in the reporting month.

3.2.5 Major noise sources during the monitoring included nearby traffic noise.

3.2.6 The Event and Action Plan for the construction noise monitoring is given in **Appendix I.**

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 J**. 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 L**.

3.4 Landscape and Visual

3.4.1 Bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted on 13 and 27 September 2022. The implementation 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 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 I**.

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 J**.

4.1.2 In the reporting month, five site inspections were carried out on 6, 13, 20 (With IEC), and 27 September 2022. 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 and Recommendations	Follow-up Actions
Air Quality	Nil	Nil	Nil
	Nil	Nil	Nil
Noise	Nil	Nil	Nil
Water Quality	6th September 2022	The Contractor was reminded to take mitigation measures to prevent the spilled fuel oils reaching the water sensitive receivers and the nearby soil.	The item was rectified by the Contractor on 8th September 2022
Waste Management	Nil	Nil	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 One (1) noise-related complaint was received in the last reporting month (i.e., 27 August 2022). The investigation reports for the complaints were finalized on 11th October 2022.

5.1.2 Three (3) noise-related and one (1) water-related complaints (i.e. 6, 9, and 28 September 2022) were received in the reporting month.

5.1.3 The complaint cases in August and September 2022 are summarized in **Table 5.1**.

Table 5.1 Environmental Complaints Log

Complaint Log No.	Date of Complaint	Received From	Nature of Complaint	Status
EC135_CKRCT2 0220827_520	27th August 2022	Contract Complaint Hotline	Construction Noise	Investigation report was finalized on 11th October 2022.
EC137_CKRCT2 0220906_525	6th September 2022	Contract Complaint Hotline	Construction Noise	Investigation report was finalized on 12th October 2022
EC138_CKRCT2 0220909_526	9th September 2022	Contract Complaint Hotline	Construction Noise	Under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.
EC139_CKRCT2 0220928_529	28th September 2022	Contract Complaint Hotline	Construction Noise	Investigation report was finalized on 12th October 2022
EC140_CKRCT2 0220928_530	28th September 2022	1823	Muddy water	Investigation report was finalized on 12th October 2022

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

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 Three (3) Action Level exceedances were 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.

5.3.2 No Action and Limit Level exceedance was recorded for construction dust 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 J**. 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 (August 2022)	14 September 2022

7 FUTURE KEY ISSUES

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

Ho Man Tin

- Multi-faces drill and blast excavation;
- Mixed and soft ground excavation;
- Ventilation adit and cavern mechanical excavation;
- TBM Tunnel enlargement by blasting;
- Underbreak scaling and smoothing works;
- Waterproofing, lining and invert concreting;
- Modification on ventilation and concrete pipe;
- Pipe pile wall construction;
- Dismantling of noise enclosure and associated equipment;
- Erection of Tower Crane

Yau Ma Tei

- Drill and break excavation;
- Drill and blast excavation;
- Canopy and arch rib installation;
- Mucking out from tunnel;
- Site and shaft installation.

Ma Tau Kok

- Drill and blast excavation;
- Mucking out from tunnel;
- Site and shaft installation.

Ka Tak Barging Point

- Spoil handling and disposal.

Sheung Lok Street

- Drop hole drilling works;
- Steel casing installation;
- Grouting

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.

7.1.3 The environmental monitoring schedule for the next reporting month is provided in **Appendix E**.

8 CONCLUSION AND RECOMMENDATIONS

8.1.1 The 37th 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 01/09/2022 to 30/09/2022.

8.1.2 Construction dust (including 1-hour and 24-hour TSP) and noise monitoring were carried out in the reporting period.

8.1.3 Three (3) Action Level exceedances were 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 One (1) noise-related complaint was received in the last reporting month (i.e., 27 August 2022). The investigation reports for the complaints were finalized on 11th October 2022.

8.1.6 Three (3) noise-related and one (1) water-related complaints (i.e. 6th, 9th, and 28th September 2022) were received in the reporting month. The investigation reports for the complaints on 6th and 28th September 2022 were finalized on 12th October 2022. The investigation report for the complaint on 9th September 2022 was under investigation and the investigation results will be reported in the subsequent Monthly EM&A Report.

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

- No specific observation was identified in the reporting month.

Construction Noise Impact

- No specific observation was identified in the reporting month.

Water Quality Impact

- The Contractor was reminded to take mitigation measures to prevent the spilled fuel oils reaching the water sensitive receivers and the nearby soil.

Waste Management

- No specific observation was identified in the reporting month.

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