



Final EM&A Review Report

0097/19/ED/0978 02 | 10 December 2025

Verified

Bouygues Travaux Publics – Contract No. HY/2018/08





Environmental Permit No. EP-457/2013/D

Central Kowloon Route

Independent Environmental Checker Verification

Works Contract:	Central Tunnel (HY/2018/08)
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Reference Document/Plan

Document/ Plan to be Certified / Verified:	Final EM&A Report
Date of Report:	10 December 2025
Date received by IEC:	10 December 2025

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: 15 December 2025
Independent Environmental Checker	

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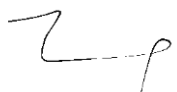
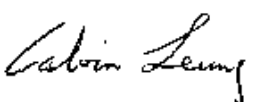
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EXECUTIVE SUMMARY

I. Introduction

This Final Environmental Monitoring and Audit (EM&A) Review Report is prepared by Fugro Technical Services Limited for the Contract No. HY/2018/08 Central Kowloon Route – Central Tunnel. Contract No. HY/2018/08 commenced on 19 September 2019. The Project was substantially completed and handed over to Contract No. HY/2014/07 Central Kowloon Route – Kai Tak West on 31 August 2025. 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 01/09/2019 to 31/08/2025.

II. Environmental Monitoring Works and Summary of Exceedances

In accordance with the approved EM&A Manual, regular air quality monitoring and noise monitoring was conducted. Impact 24-hour Total Suspended Particulates (TSP) monitoring was 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. Impact noise monitoring was conducted at the designated noise monitoring stations for at least once a week during the construction phase of the Project.

a. Air and Noise

Impact monitoring at M-A3/ M-N3 was conducted by ET of Contract No. HY/2018/08 from 19 September 2019 to 27 December 2023.

Since January 2024, impact monitoring at M-A3/ M-N3 was conducted by Environmental Team of Contract HY/2019/13. The monitoring results at M-A3 and M-N3 after December 2023 are presented in the monthly EM&A Report prepared by Contract No. HY/2019/13.

No Action or Limit Level exceedance was recorded for construction dust monitoring between September 2019 to December 2023. More details are presented in **Section 3.1**.

209 Action Level exceedances and no Limit Level exceedance for construction noise monitoring were recorded during the reporting period. More details are presented in **Section 3.2**.

b. Waste Management

No significant impact associated to waste management was identified during the reporting period. The environmental mitigation measures for the waste management are considered to be implemented effectively during the reporting period. Details are presented in **Section 3.3**.

c. Landscape and Visual

Observations and recommendations are made for the implementation of landscape and visual mitigation measures during bi-weekly site inspections throughout the reporting period. The landscape and visual mitigation measures are implemented effectively throughout the reporting period. Details are presented in **Section 3.4**.

III. Environmental Site Inspection

Site inspections were carried out by the representatives of the Contractor, Engineer and ET on a weekly basis (monthly basis for IEC representative) to ensure environmental mitigation measures

properly implemented for the construction works activities associated with the Project during the reporting period. Details are presented in **Section 4**.

IV. Complaint Handling, Prosecution and Public Engagement

The Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions and Public Engagement Activities during the reporting period are summarized in **Table I**.

Table I Environmental Complaints Log

Reporting Period	Complaints	Notifications of Summons and Prosecutions	Public Engagement Activities
September 2019 to August 2025	209	1	0

One environmental prosecution for the main Contractor was recorded in July 2025.

No public engagement activities were conducted in the reporting period.

V. Conclusion

The recommended environmental mitigation measures as proposed in the EIA report and the approved EM&A Manual were considered to have been effectively implemented to minimize the potential environmental impacts arising from the Project. The EM&A programme was effective in monitoring environmental impacts arising from the Project and ensuring proper implementation of mitigation measures.

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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 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 Final EM&A Report for the Contract which summaries 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 19 September 2019 to 31 August 2025.
- 1.1.6 All major construction works were substantially completed on 29 July 2025, following the hand-over of the Ma Tau Kok Construction Site to Contract No. HY/2014/07. All working areas were also handed over to other contracts of the Central Kowloon Route. The termination of EM&A Programme of the Contract was proposed by the Contractor and the Engineer’s Representative (ER) in the Site Safety and Environmental Management Committee (SSEMC) Meeting on 28 August 2025. The EM&A Programme of the Contract was terminated on 31 August 2025.

1.2 Project Organization

- 1.2.1 The project organization structure is shown in **Appendix A**. The contact names and numbers of key personnel 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 the Contract under the EP commenced in October 2019.

1.3.2 The site layout plan of the Contract is shown in **Figure 1**.

1.4 Works undertaken during the reporting period

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

Ho Man Tin

- Pretreatment for diaphragm wall
- Predrilling for ventilation building foundation
- Modification of existing blast cover
- Pre-bored H piling for ventilation shaft
- Modification of existing shaft enclosure
- Site installation and utilities diversion
- Initial tunnel excavation for construction adit
- Mucking out from tunnel
- Construction of CLP transformer room
- Formation of site haul road leading to Chung Hau Street
- Drill and blast excavation
- Construction of spoil basin
- Erection of blast doors at construction adits
- Removal of oversize tree T143
- Construction of site egress to Chung Hau Street
- Erection of noise enclosure
- Installation of gantry crane
- Dismantling of blasting cover
- Ground investigation works
- Site and shaft installation
- Erection of site office
- Tunnel Boring Machine (TBM) Assembly
- Pilot tunnel exaction by Tunnel Boring Machine (TBM)
- Tunnel mixed ground/ soft ground excavation

- Canopy and arch rib installation
- Tunnel smoothing works
- Modification of dewatering system
- Civil work preparation for Tunnel Boring Machine (TBM) breakout
- Preparation of surface pipe piling works
- Preparation for dismantling Tunnel Boring Machine (TBM) removal
- Site formation for pipe piling works
- Concreting for invert
- Tunnel Boring Machine (TBM) dismantling and removal
- Assembly for waterproofing and lining gantry
- Pipe piling works
- 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
- Pile cap construction for tower crane
- Advance works for dismantling of noise enclosure and associated equipment
- Multi-faces drill and blast excavation
- Mixed and soft ground excavation
- Foundation of tower crane
- Dismantling of noise enclosure and associated equipment
- Erection of tower crane
- Demobilization of Shaft
- Preparation for slipform installation
- Invert, lining and OHVD construction
- Internal structure for ventilation adit and cavern
- Dismantling of shaft utilities
- Shaft slipform construction
- ELS excavation
- Finishing for shaft slipform
- Struct installation and D-wall coring
- CLP Room demolition and slope reinstatement
- Road improvement and re-surfacing work
- Slope work maintenance
- Slope reinstatement work

Ma Tau Kok

- Drill and break excavation
- Reinforcement for the access shaft

- Site and shaft installation
- Hydraulic acoustic cover installation for the access shaft
- Mucking out from tunnel
- Canopy installation
- Erection of noise enclosure
- Tunnel Boring Machine (TBM) break- out face civil work
- Drill and blast excavation
- Installation of new ventilation system
- Erection of utility tower and passenger hoist
- Tunnel Boring Machine (TBM) dismantling and removal
- TBM pilot tunnel enlargement
- Underbreak scaling and smoothing works
- Invert, lining and OHVD construction
- Mucking out from tunnel and horizontal access
- Road slab and invert slab construction
- Waterproofing work
- Cut and cover construction
- Plant and material lifting
- Backfilling of C&C area
- Site reinstatement work
- Dismantling work of noise enclosure
- Dismantling work of 60T gantry crane

Yau Ma Tei

- Drill and break excavation
- Probe grouting
- Site and shaft installation
- Mucking out from tunnel
- Drill and blast excavation
- Canopy and arch-rib installation
- Erection of noise enclosure
- Canopy and arch rib installation
- Excavation for benching
- Underbreak scaling and smoothing works
- Invert, lining and OHVD construction
- Plant and material lifting
- Road slab and invert slab construction
- Waterproofing work
- Extension of Noise Enclosure
- Cut and cover construction
- Demolish of noise enclosure
- Noise enclosure and gantry crane dismantlement

- Profile barriers installation for tunnel
- CLP Room removal
- Site reinstatement work

Sheung Lok Street

- Preparation for installation of drop pipe
- Drop hole drilling works
- Steel casing installation
- Grouting
- Erection of noise enclosure
- Modification of noise enclosure
- Concreting and importing fill material by drop pipe
- Backfilling and road reinstatement
- Site reinstatement work

Kai Tak Barging Point

- Spoil handling and disposal
- Material storage
- Temporary C&D handling

Chi Man Street

- Extensive grouting
- Trial grouting

Ma Hang Chung Road

- Construction of drop pipe
- Concreting
- Site reinstatement work

Princess Margaret Road

- Drilling and extensive grouting
- Reinstatement of working area
- Reinstatement of planter

Kowloon City Area

- Ground investigation works

Portion 17, 18, 18 KLB

- Slope work maintenance (Portion 17)
- Erection of main site office (Portion 18)
- Site reinstatement work (Portion 18 KLB)

2 SUMMARY OF 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 Impact monitoring at M-A3/ M-N3 was conducted by ET of Contract No. HY/2018/08 from 19 September 2019 to 27 December 2023. After 27 December 2023, impact monitoring at M-A3/ M-N3 was conducted by Environmental Team of 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 since January 2024.
- 2.1.3 The construction dust and noise monitoring locations at E-A14a, E-N12a and E-N21a are 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.
- 2.1.4 The construction dust and noise monitoring locations at W-A6, W-N18 and W-N25A are 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 Action and Limit Levels for construction dust monitoring are provided in **Appendix B**.

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.
- 2.3.3 The Action and Limit Levels for construction dust monitoring are provided in **Appendix B**.

2.4 Landscape and Visual

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

3 SUMMARY OF ENVIRONMENTAL MONITORING RESULTS

The EM&A programme was undertaken in accordance with the approved EM&A Manual for the Project. EM&A works for construction dust monitoring, construction noise monitoring, waste management, site audit, landscape and visual and culture heritage were conducted throughout the reporting period.

3.1 Construction Dust Monitoring

- 3.1.1 Construction dust monitoring at M-A3 was conducted throughout the reporting period, the detailed monitoring results were reported in the Monthly EM&A Report. Statistical table and graphical representation of the construction dust monitoring results over the reporting period are presented in **Appendix C**.
- 3.1.2 No Action or Limit Level exceedance was recorded for construction dust monitoring during the reporting period.
- 3.1.3 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.

3.2 Construction Noise Monitoring

- 3.2.1 Construction noise monitoring at M-N3 was conducted throughout the reporting period, the detailed monitoring results were reported in the Monthly EM&A Report. Statistical table and graphical representation of the construction noise monitoring results over the reporting period are presented in **Appendix D**.
- 3.2.2 209 Action Level exceedances for construction noise monitoring were recorded during the reporting period, all of which were associated with complaint cases regarding construction noise. No Limit Level exceedance was recorded for construction noise monitoring during the reporting period.
- 3.2.3 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.

3.3 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 No significant impact associated to waste management was identified throughout the reporting period. The implemented environmental mitigation measures for the waste management in the reporting period are summarized in **Appendix F**.
- 3.3.3 The summary of observations and recommendations made for waste management throughout the construction of the Project could be referred to **Table 4.1** of the corresponding Monthly EM&A Report.
- 3.3.4 The accumulated wastes generated by the Project throughout the reporting period is shown in **Appendix H**.

3.4 Landscape and Visual

- 3.4.1 An EM&A programme for landscape and visual resources was undertaken during the construction phases of the Project. Bi-weekly inspections of the implementation of landscape and visual mitigation measures were conducted throughout the reporting months. The implementation of the landscape and visual mitigation measures in the reporting months are summarized in **Appendix F**.
- 3.4.2 The summary of observations and recommendations made for landscape and visual mitigation measures during site inspections throughout the construction of the Project could be referred to **Table 4.1** of the corresponding Monthly EM&A Report.
- 3.4.3 The Event and Action Plan for landscape and visual during construction phase is given in **Appendix E**.

4 ENVIRONMENTAL SITE INSPECTION AND AUDIT

- 4.1.1 Throughout the course of the Project, site inspections were carried out by the representatives of the Contractor, Engineer and ET on a weekly basis to ensure that appropriate environmental protection and pollution control mitigation measures were properly implemented for the construction works activities associated with the Project. The representative of the IEC joined the site inspections once per month.
- 4.1.2 The observations and recommendations provided by the ET were rectified by the Contractor within an appropriate timeframe. Details of these observations and recommendations from site inspections throughout the reporting period can be referenced to **Table 4.1** of the corresponding Monthly EM&A Reports.
- 4.1.3 A summary of the mitigation measures implementation status is provided in **Appendix F**.

5 ENVIRONMENTAL COMPLAINT AND NON-COMPLIANCE

5.1 Complaint Handling, Prosecution and Public Engagement

- 5.1.1 There were two-hundred and nine (209) complaints received throughout the reporting period.
- 5.1.2 There was one (1) notification of summon and prosecution for the main contractor throughout the reporting period, which was recorded in July 2025.
- 5.1.3 Summary of the complaint cases and their details of investigation throughout the reporting period could be retrieved from the **Table 5.1** in corresponding Monthly EM&A Report.
- 5.1.4 No public engagement activities were conducted throughout the reporting period.
- 5.1.5 Summaries of complaints, notification of summons and successful prosecutions are presented in **Appendix G**.

5.2 Summary of Monitoring Exceedance

- 5.2.1 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.
- 5.2.2 No Action or Limit Level exceedance was recorded for construction dust monitoring throughout the reporting period. No Limit Level exceedance was recorded for construction noise monitoring throughout the reporting period.
- 5.2.3 One hundred and sixty (160) Action Level exceedances of construction noise monitoring were recorded due to complaint cases during the monitoring period conducted by the Project from 19 September 2019 to 27 December 2023.
- 5.2.4 There were no Environmental Non-Compliances recorded during the reporting period
- 5.2.5 Cumulative statistics on monitoring exceedance are presented in **Appendix G**.

6 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURE

- 6.1.1 Environmental mitigation measures and requirements as stated in the EIA Report, the EP, and the EM&A Manual were implemented by the Contractor as far as practicable and were considered effective. The implementation status of these mitigation measures during the reporting period is summarized in **Appendix F**.
- 6.1.2 Status of required submissions under the EP during each reporting month throughout the reporting period could be retrieved from **Table 6.1** in corresponding Monthly EM&A Report.

7 CONCLUSION AND RECOMMENDATIONS

- 7.1.1 This Final 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 01/09/2019 to 31/08/2025.
- 7.1.2 All major construction works were substantially completed on 29 July 2025, following the hand-over of the Ma Tau Kok Construction Site to Contract No. HY/2014/07. All working areas were also handed over to other contracts of the Central Kowloon Route. The termination of EM&A Programme of the Contract was proposed by the Contractor and the Engineer's Representative (ER) in the Site Safety and Environmental Management Committee (SSEMC) Meeting on 28 August 2025. The EM&A Programme of the Contract was terminated on 31 August 2025.
- 7.1.3 No Action or Limit Level exceedance was recorded for construction dust monitoring throughout the reporting period. No Limit Level exceedance was recorded for construction noise monitoring during the reporting period.
- 7.1.4 Two-hundred and nine (209) Action Level exceedances for construction noise monitoring were recorded due to complaint cases about construction noise. Details of investigation could be retrieved from corresponding Monthly EM&A Report.
- 7.1.5 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.
- 7.1.6 There were two-hundred and nine (209) complaints received throughout the reporting period.
- 7.1.7 There was one (1) notification of summon and prosecution for the main contractor throughout the reporting period, which was recorded in July 2025.
- 7.1.8 The recommended environmental mitigation measures as stated in the EIA Report and approved EM&A Manual has been fully implemented to minimize the potential environmental impacts from the Project during the construction period. The EM&A programme results show that no significant environmental impact was raised from the Project, which is generally in line with the EIA predictions that, with the full implementation of the recommended mitigation measures, no unacceptable or residual air quality and noise impacts would be arose from the Project-related construction works. The EM&A programme for this project was considered effective.
- 7.1.9 It is recommended that the Contractor shall ensure the key mitigation measures stated in the EIA Report and the approved EM&A Manual are fully implemented during the operation phase and review the measures on a regular basis.

Figure 1

The Site Layout Plan of the
Contract

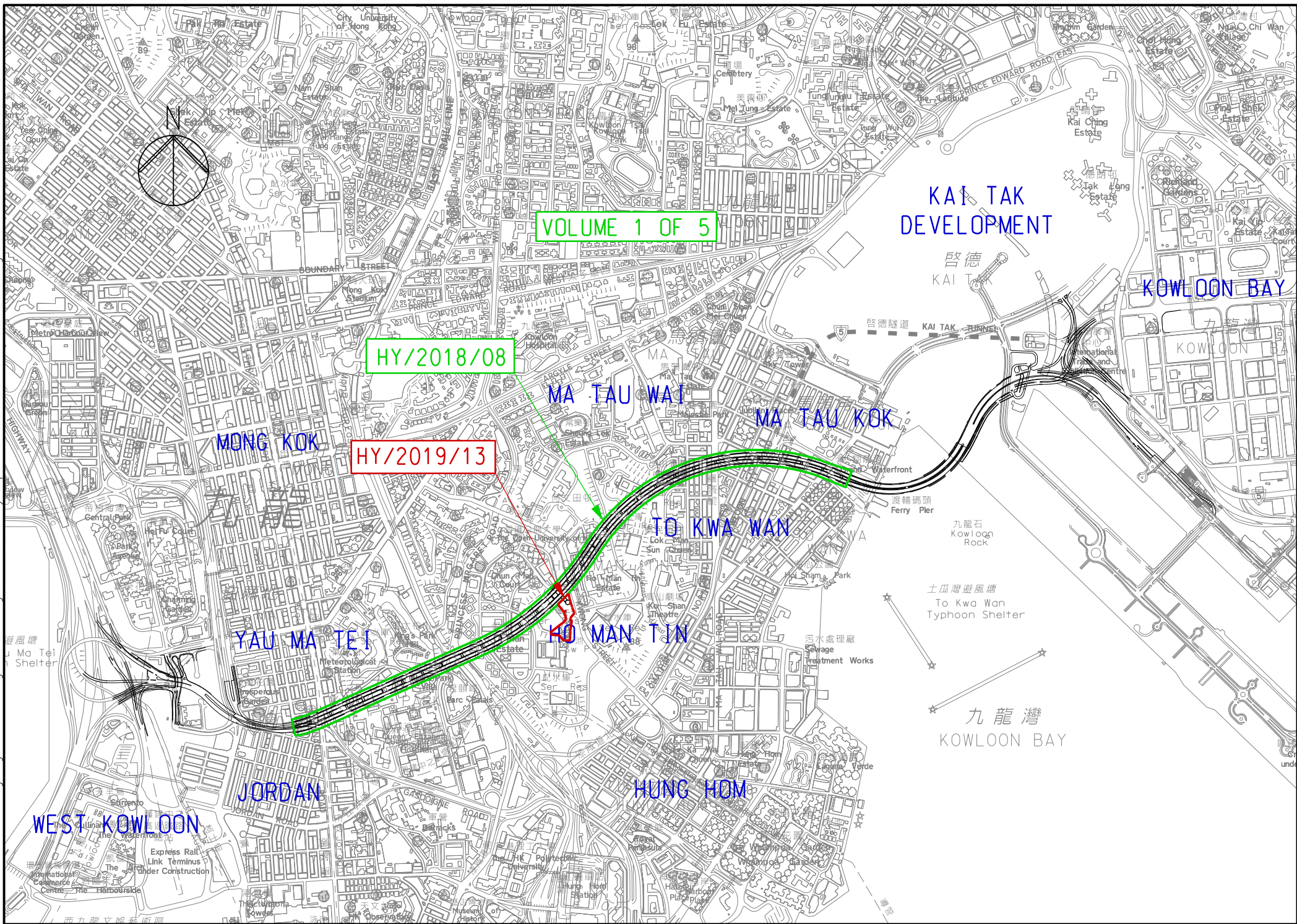
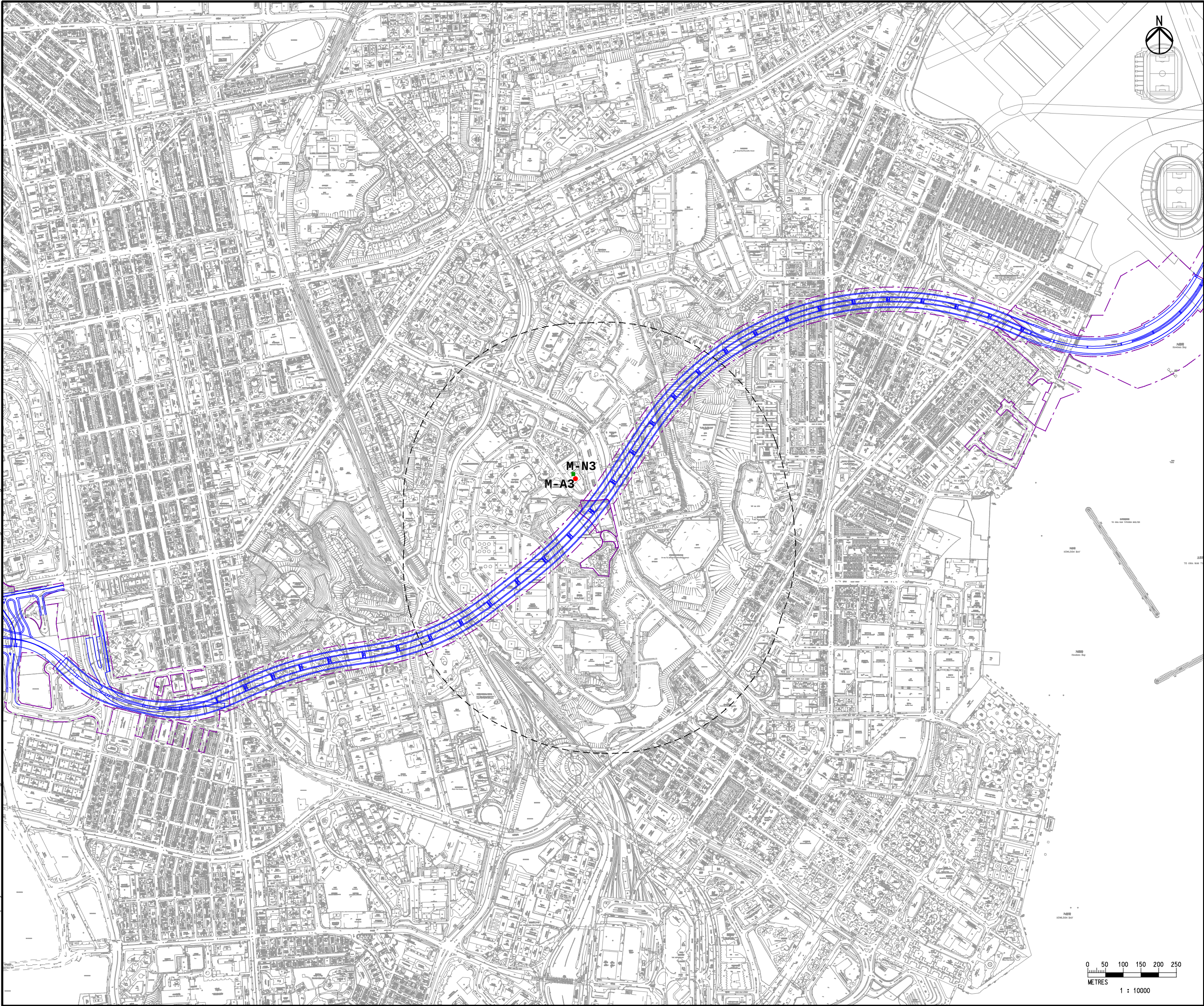


Figure 2.1

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

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



Legend

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

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
Rev	Description	By	Date

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

Drawn	Date	Checked	Approved
GL	01/13	FC	ST
Scale	1:10000 ON A3		PRELIMINARY

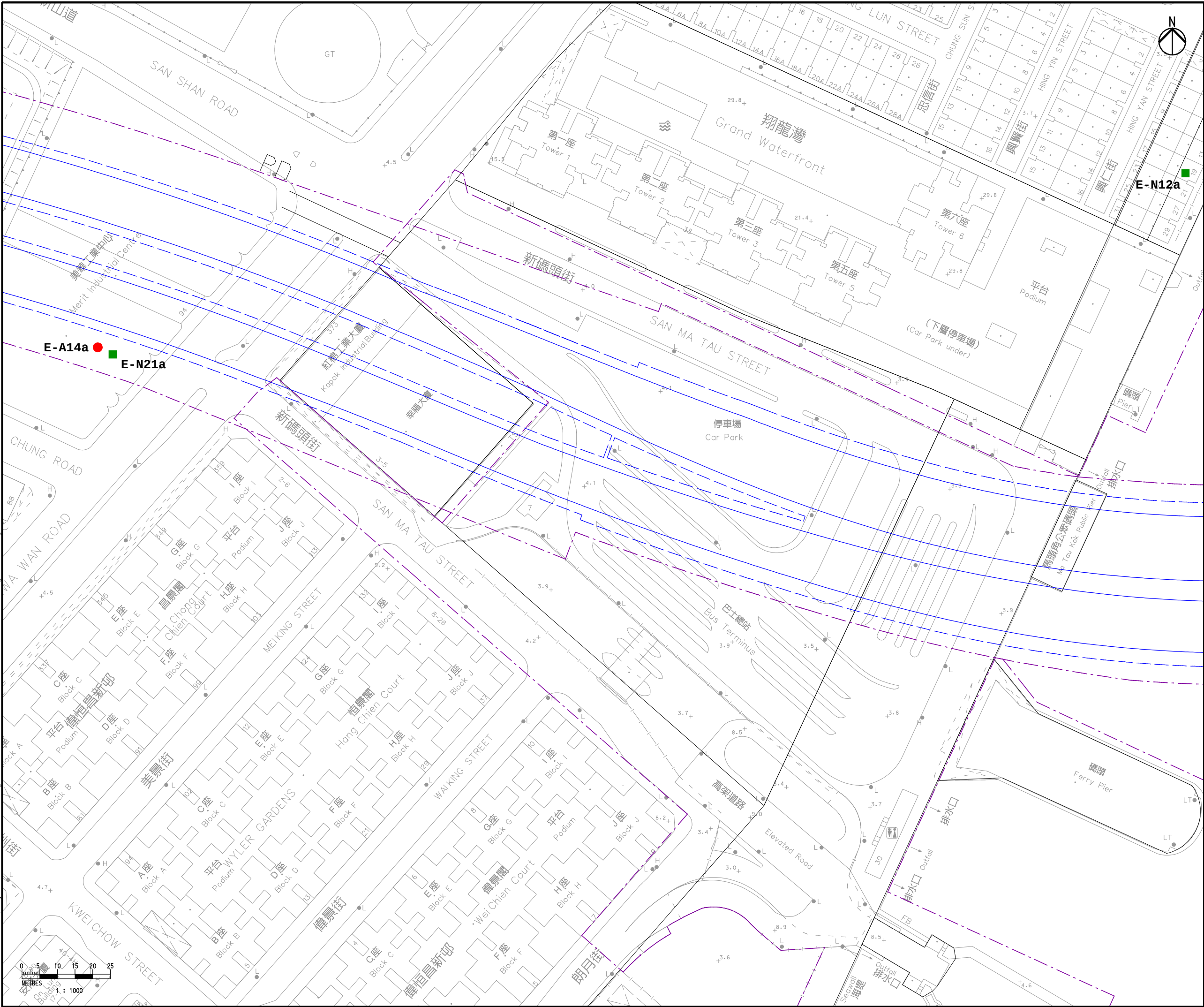
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Figure 2.2

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

Printed by : 12/13/2012
Filename : G:\env\project\217722-70\13 Drawing Deliverables\18 EM&A Manual\05 Final\Ch. 6\Figure 6.12.dgn



Legend

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

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

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
Scale	1:1000 ON A3	Status	PRELIMINARY

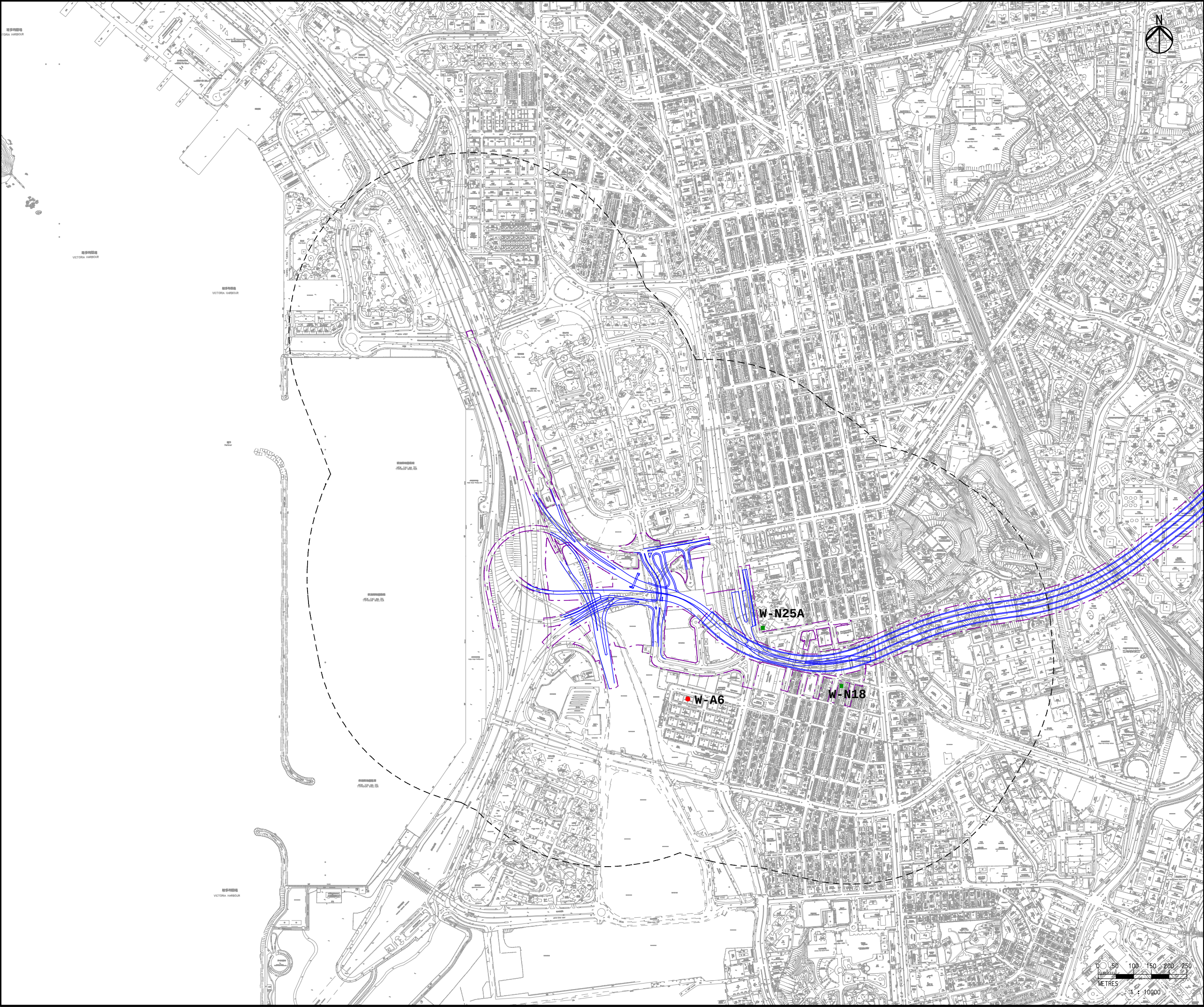
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Figure 2.3

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

Printed by : 1/28/2013
Filename : G:\env\project\217722-70\13 Drawing Deliverables\18 EM&A Manual\06 FinalSubmission\Ch. 5\Figure 5.1.dgn



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

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
Rev	Description	By	Date

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)

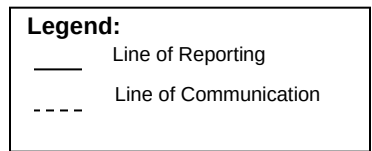
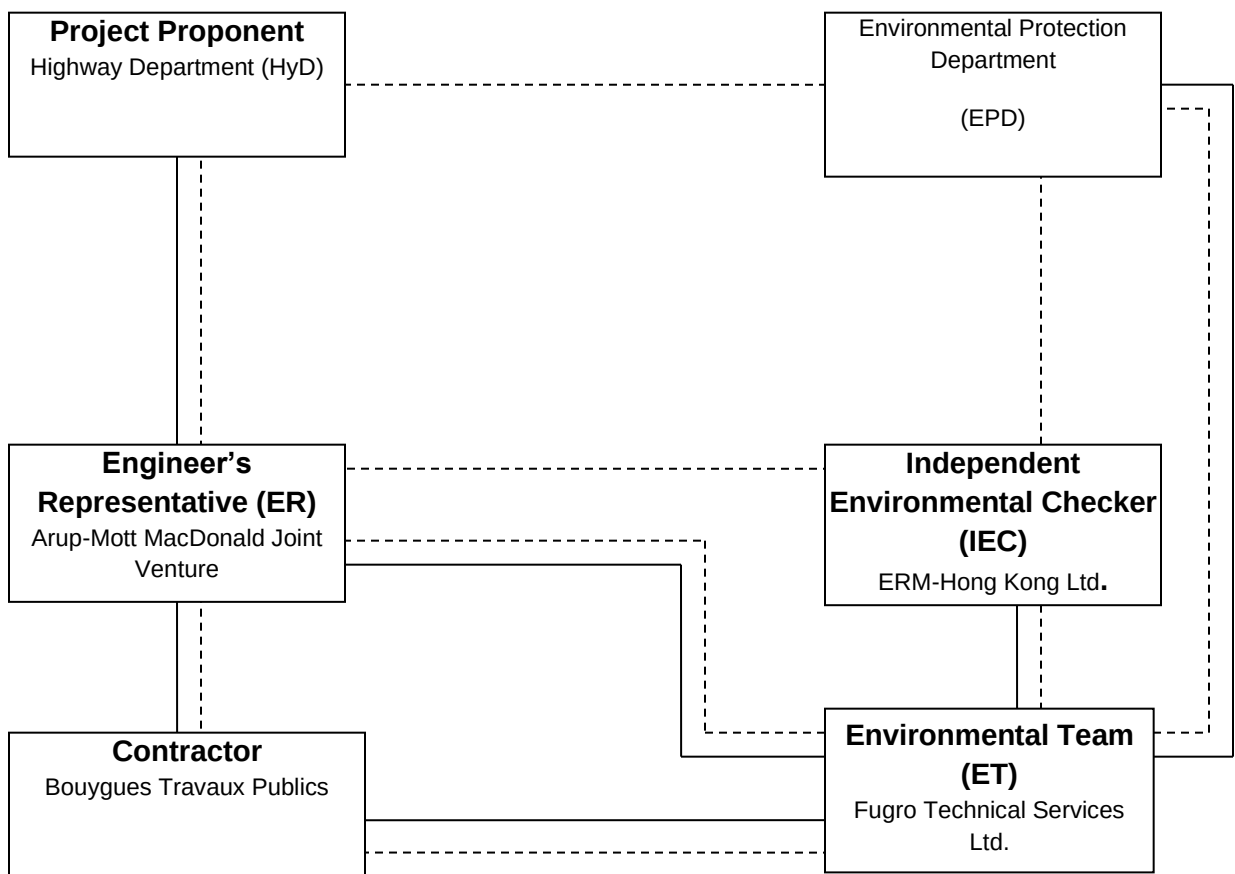
Figure 2.3			Rev. E
Drawn GL	Date 01/13	Checked FC	Approved ST
Scale 1:10000 ON A3	Status PRELIMINARY		

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Appendix A

Project Organization Chart



Appendix B

Action and Limit Levels for Construction Dust and Noise Monitoring

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

Station ID	Location	Action Level	Limit Level
M-A3	SKH Tsoi Kung Po Secondary School	333 µg/m ³	500 µg/m ³

Table B-2 Action and Limit Levels for 24-hour TSP

Station ID	Location	Action Level	Limit Level
M-A3	SKH Tsoi Kung Po Secondary School	153 µg/m ³	260 µg/m ³

Table B-3 Action and Limit Levels for Construction Noise (0700 – 1900 hour of normal weekdays)

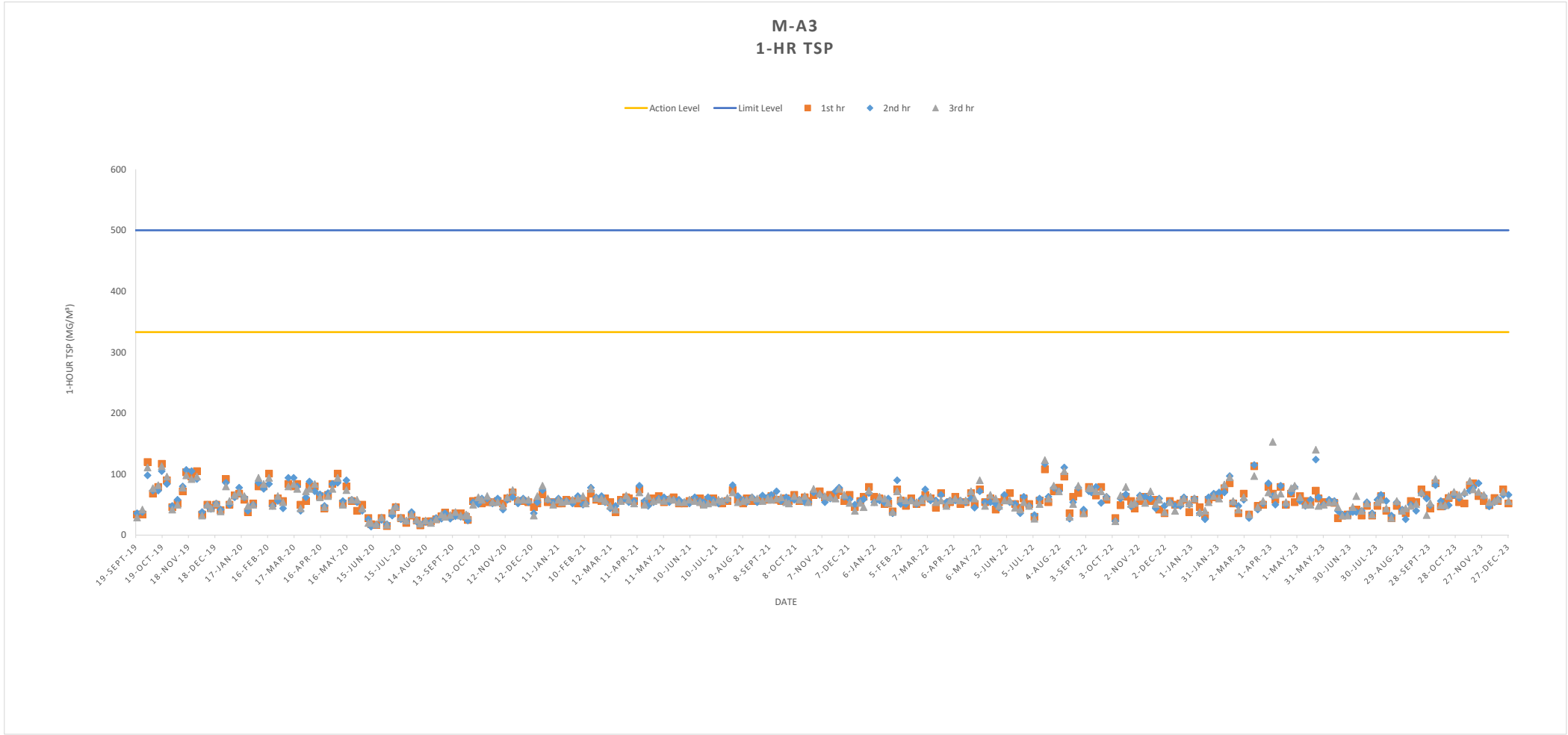
Station ID	Location	Action Level	Limit Level
M-N3	SKH Tsoi Kung Po Secondary School	When one documented compliant is received	For Schools: 70dB(A) during normal teaching period and 65 dB(A) during examination periods

Appendix C

Summary and Graphical

Presentation of Air Monitoring

Results

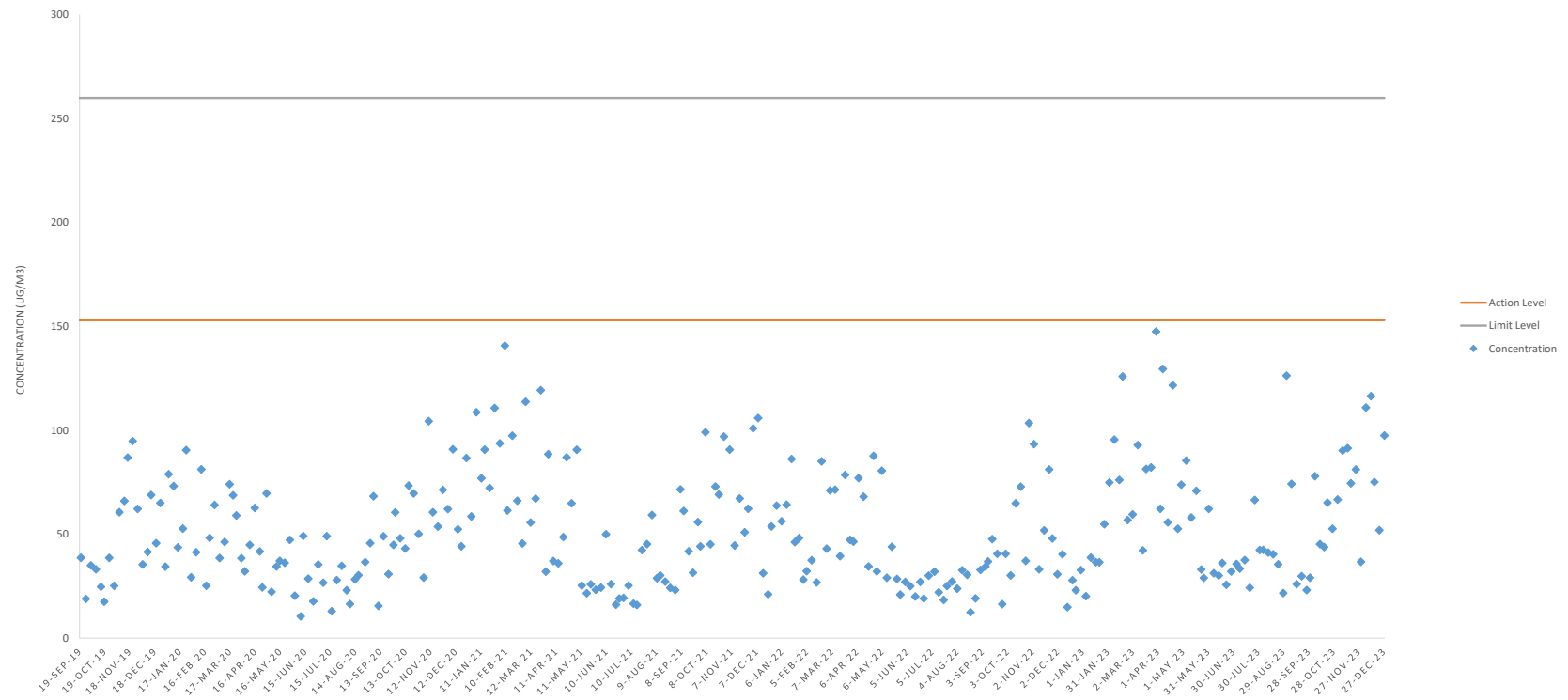


Remark: The Contract no. HY/2018/08 Central Kowloon Route – Central Tunnel commenced on 19 September 2019.

Summary of Construction Phase 1-hour TSP Monitoring Results at M-A3

	TSP Concentration, $\mu\text{g}/\text{m}^3$
Range	14 - 153
Average	57
Action Level	333
Limit Level	500

M-A3 24-HR TSP



Remarks: The Contract no. HY/2018/08 Central Kowloon Route – Central Tunnel commenced on 19 September 2019.

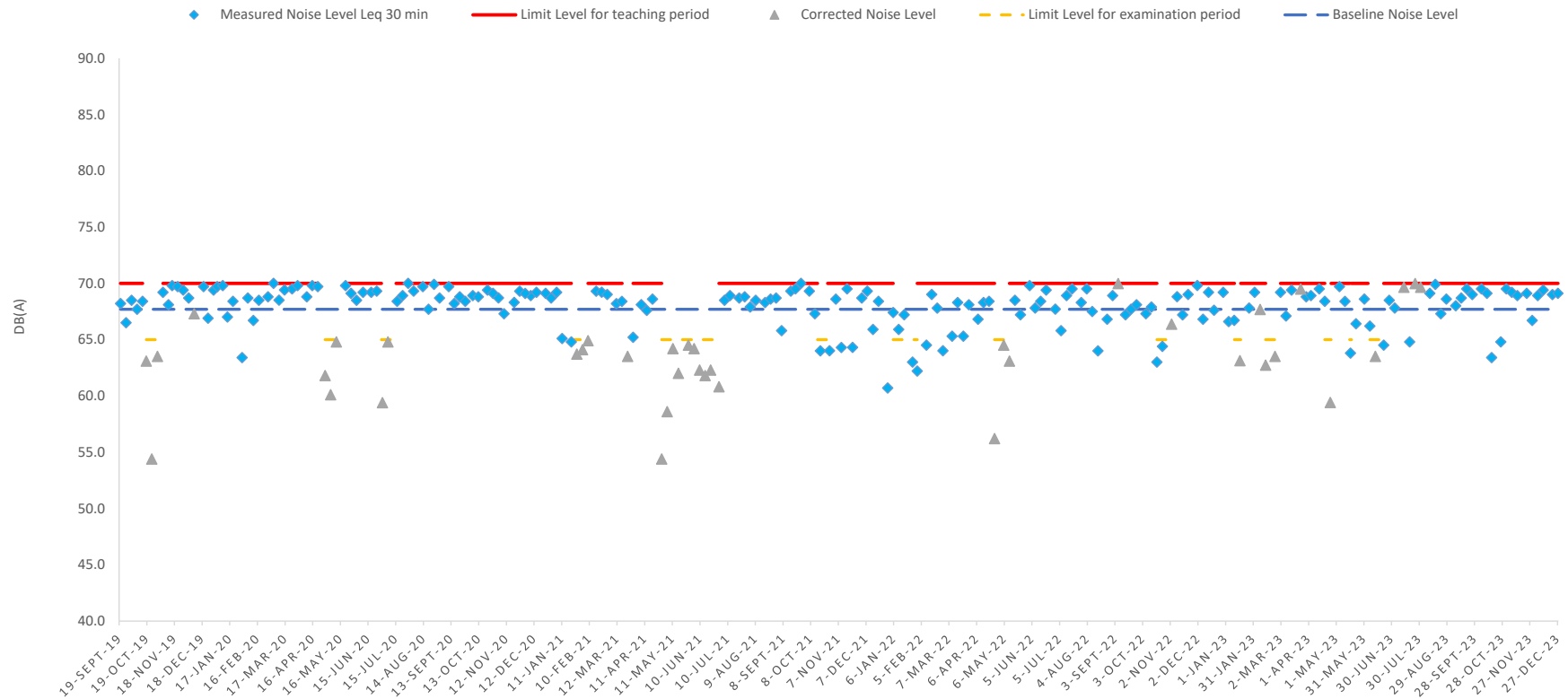
Summary of Construction Phase 24-hour TSP Monitoring Results at M-A3

	TSP Concentration, $\mu\text{g}/\text{m}^3$
Range	8 - 147
Average	51
Action Level	153
Limit Level	260

Appendix D

Summary and Graphical
Presentation of Noise
Monitoring Results

M-N3 NOISE MONITORING GRAPH



- Remark: 1. The Contract no. HY/2018/08 Central Kowloon Route – Central Tunnel commenced on 19 September 2019.
 2. Corrected Noise Level = $10 \cdot \log(10^{\text{Measured Noise Level}/10} - 10^{\text{Baseline Noise Level}/10})$
 3. Free field noise levels were adjusted with a correlation of +3 dB(A)

Summary of Construction Phase Noise Monitoring Results

L_{Aeq} (30 mins) between 0700 and 1900

Station ID	Location	dB(A)		
		Range		
M-N3	SKH Tsoi Kung Po Secondary School	54.4	-	70.0

Appendix E

Event and Action Plan

Table E-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 E-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 E-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 E-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 F

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
		- 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

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
		- 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
		- 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

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
Water Quality			
S6.9.1.1	W1	<u>Construction Runoff</u> - 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
		- 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 minimise 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

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	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;	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 summarised 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
		- 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	<u>Tunnelling Works and Underground Works</u> - 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.

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
		- 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	<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.	Implemented
S6.9.1.5	W4	<u>Groundwater from Potential Contaminated Area</u> - No direct discharge of groundwater from contaminated areas should be adopted;	N.O.
		- 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.

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
S6.9.1.6	W6	<u>Accidental Spillage</u> - 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	<u>On-site sorting of C&D materials</u> - 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 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.	N.O.
S7.5.1	WM2	<u>Construction and Demolition Materials</u>	Implemented
		- 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		

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
S7.5.1	WM3	<u>C&D Waste</u> - 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
		- 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

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
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
		- 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	<u>General Refuse</u> - 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	<u>Remaining SI Works</u> - 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.

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
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.
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
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

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
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. 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	<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.	N.O.
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.	Implemented
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.	N.O.
S10.10.1, Table 10.11	LV7	<u>Tree Protection & Preservation</u> - 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	<u>Tree Transplantation</u> - 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 ETWBTC 2/2004 and 3/2006.	N.O.
S10.10.1, Table 10.11	LV9	<u>Compensatory Planting</u> - 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.

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
S10.10.1, Table 10.11	LV10	<u>Screen Planting</u> - 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	<u>Green Roof</u> - 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	<u>Reinstatement</u> - 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	<u>Reprovisioning of Public Open Space</u> - All areas of public open space affected by the Project will be re-provisioned 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	<u>Landscape enhancement</u> - 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 re-provisioned areas. In particular: - landscape enhancement of re-provisioned Public Transport Interchange; - landscape deck on tunnel portals; - viaduct planters for trailer planting.	N.O.
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	<u>Tin Hau Temple (CKR-02)</u> - 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.

EIA Ref	EM&A Log Ref	Recommended Environmental Protection Measures/ Mitigation Measures	Implementation Status
S12.6.1, Table 12.2	CH6	<u>Kowloon Methodist Church (CKR-10)</u> - 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	<u>Ma Tau Kok Animal Quarantine Depot (CKR-12)</u> - 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	<u>Air raid precaution tunnels of the K1 Network (CKR-14)</u> - 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 G

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

Table G-1 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	0	0	0
Cumulative Project-to-Date	209	1	0

Table G-2 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	0	0
	Cumulative Project-to-Date	160 ¹	0

Note:

1. The monitoring exceedances for noise were due to complaint cases during the period from 19 September 2019 to 27 December 2023. No construction noise monitoring was conducted after December 2023 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 H

Waste Flow Table

Monthly Summary Waste Flow Table (2019)

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Reused in the Contract	Reused in other Projects	Disposed as Public Fill	Imported Fill	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)	(in '000m ³)	(in '000m ³)
Sep	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0019
Oct	0.0367	0.0000	0.0000	0.0000	0.0367	0.0000	0.0000	0.0000	0.0000	0.0000	0.0070
Nov	0.7073	0.0000	0.0000	0.0000	0.7073	0.0000	0.0000	0.0000	0.0000	0.0000	0.0066
Dec	1.5400	0.0000	0.0000	0.0000	1.5400	0.0000	0.0000	0.0000	0.0000	0.0000	0.0203
Sub-Total	2.2840	0.0000	0.0000	0.0000	2.2840	0.0000	0.0000	0.0000	0.0000	0.0000	0.0358
Total	2.2840	0.0000	0.0000	0.0000	2.2840	0.0000	0.0000	0.0000	0.0000	0.0000	0.0358

Notes:

1. Following assumption is made for calculation:

- i) 1m³ of inert material weight 2.2 tonne;
- ii) 1m³ of non-inert material weight 1.6 tonne;
- iii) 1m³ of chemical waste weight 0.88 tonne.

Monthly Summary Waste Flow Table (2020)

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
Jan	3.8964	0.0000	0.0000	3.8964	0.0000	0.0000	0.0000	0.0000	0.0145
Feb	2.8284	0.0000	0.0000	2.8284	0.0000	0.0000	0.0000	0.0000	0.0075
Mar	7.8279	0.0000	0.0000	7.8279	13.9100	0.9000	0.0000	0.0000	0.0212
Apr	9.3300	0.0000	0.0000	9.3300	10.0000	0.3300	0.0000	0.0000	0.0303
May	7.3166	0.0000	1.7271	5.5895	2.1300	0.0000	0.0000	0.7040	0.0145
Jun	9.5051	0.0000	8.9591	0.5460	8.9100	0.3100	0.0000	0.0000	0.0125
Sub-Total (2020)	40.7044	0.0000	10.6862	30.0182	34.9500	1.5400	0.0000	0.7040	0.1005
Jul	11.1037	0.0000	9.3582	1.7455	0.0000	0.3600	0.0000	0.0000	0.0319
Aug	20.6882	0.0000	18.1577	2.5305	10.4920	0.2200	0.0032	1.2320	0.0269
Sep	20.0092	0.0000	19.9242	0.0850	0.0030	0.0000	0.0070	0.0000	0.0238
Oct	8.1947	0.0000	7.7723	0.4224	3.7410	0.0000	0.0042	0.8800	0.0132
Nov	2.8801	0.0000	0.0000	2.8801	0.0000	0.7100	0.0075	0.0000	0.0491
Dec	26.4715	0.0000	9.4547	17.0168	0.0052	0.3200	0.0000	1.4080	0.0159
Total (2020)	130.0518	0.0000	75.3533	54.6985	49.1912	3.1500	0.0219	4.2240	0.2613
Total accumulated waste quantity	132.3358	0.0000	75.3533	56.9825	49.1912	3.1500	0.0219	4.2240	0.2971

Notes:

1. Following assumption is made for calculation:

i) 1m³ of inert material weight 2.2 tonne;

ii) 1m³ of non-inert material weight 1.6 tonne;

iii) 1m³ 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)

Monthly Summary Waste Flow Table (2021)

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
Jan	14.5751	0.0000	7.1632	7.4119	0.0020	0.0000	0.0000	0.0000	0.0210
Feb	28.9735	0.0000	5.0064	23.9671	0.0020	0.3700	0.0070	0.0000	0.0223
Mar	48.8382	0.0000	28.7197	20.1185	0.0030	0.5100	0.0030	0.8800	0.0294
Apr	44.1959	0.0000	44.0006	0.1953	0.0060	0.3000	0.0064	0.8800	0.0361
May	54.184	0.0000	54.1432	0.0408	0.0130	0.2870	0.0240	1.0560	0.0355
Jun	53.1209	0.0000	53.1177	0.0032	0.0020	0.3900	0.0020	4.4000	0.0625
Sub-Total (2021)	243.8876	0.0000	192.1508	51.7368	0.0280	1.8570	0.0424	7.2160	0.2068
Jul	59.4543	0.0000	59.3124	0.1419	0.0024	0.2000	0.0021	3.6960	0.0638
Aug	61.0077	0.0000	60.2823	0.7255	0.0210	0.2550	0.0098	3.6960	0.0594
Sep	61.0355	0.0000	60.2860	0.7495	0.0066	0.1700	0.0078	2.4640	0.0619
Oct	41.5818	0.0000	40.9318	0.6500	0.0097	0.5350	0.0095	4.7520	0.0338
Nov	57.7724	0.0000	56.9633	0.8091	0.0071	0.1650	0.0077	0.0000	0.0286
Dec	46.3612	0.0000	39.6288	6.7324	0.0094	0.2100	0.0067	3.6960	0.0373
Total (2021)	571.1005	0.0000	509.5554	61.5452	0.0842	3.3920	0.0860	25.5200	0.4916
Total accumulated waste quantity	703.4363	0.0000	584.9087	118.5277	49.2754	6.5420	0.1079	29.7440	0.7887

Notes:

1. Following assumption is made for calculation:

i) 1m³ of inert material weight 2.2 tonne;

ii) 1m³ of non-inert material weight 1.6 tonne;

iii) 1m³ 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)

4. Construction waste record had been updated according to latest information from Contractor in December 2021

Monthly Summary Waste Flow Table (2022)

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)	2.2840	0.0000	0.0000	2.2840	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
Jan	33.0835	0.0000	25.3038	7.7797	0.0081	0.2860	0.0040	3.1680	0.0528
Feb	17.2623	0.0000	11.7800	5.4823	0.0035	0.3200	0.0104	3.3440	0.0200
Mar	23.0532	0.0782	20.4250	2.5500	0.0000	0.1450	0.0000	3.8808	0.0438
Apr	35.9891	3.0068	30.7500	2.9800	0.0047	0.3050	0.0098	0.0000	0.0384
May	39.8455	1.8614	23.14	12.6914	0.0031	0.3600	0.0057	6.5120	0.0308
Jun	49.8	0.6682	14.6968	33.8541	0.0085	0.4700	0.0117	6.3518	0.0581
Sub-Total (2022)	199.0336	5.6146	126.0956	65.3375	0.0279	1.8860	0.0416	23.2566	0.2439
Jul	52.1995	0.5409	23.4573	27.2195	0.0101	0.1200	0.0181	0.0000	0.0435
Aug	34.1768	0.1591	25.4436	7.9632	0.0055	0.4800	0.0099	9.1520	0.0598
Sep	34.8341	1.3205	15.7423	16.0914	0.0081	0.1400	0.0219	3.1680	0.0505
Oct	45.3936	0.3023	37.7436	7.3477	0.0068	0.1850	0.0196	3.8720	0.0914
Nov	49.1432	0.0000	43.3268	5.8164	0.0074	0.5200	0.0102	1.9360	0.1110
Dec	57.9365	0.0000	48.8750	7.4264	0.0068	0.2000	0.0169	3.5200	0.1431
Total (2022)	472.7173	7.9374	320.6842	137.2021	0.0726	3.5310	0.1382	44.9046	0.7432
Total accumulated waste quantity	1176.1536	7.9374	905.5929	255.7298	49.3480	10.0730	0.2461	74.6486	1.5319

Notes:

1. Following assumption is made for calculation:

- i) 1m³ of inert material weight 2.2 tonne;
- ii) 1m³ of non-inert material weight 1.6 tonne;
- iii) 1m³ 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)

Monthly Summary Waste Flow Table (2023)

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
Jan	53.2818	0.0000	50.2477	3.0341	0.0033	0.1650	0.0120	0.0000	0.0688
Feb	72.6005	0.0000	65.6327	6.9677	0.0058	0.1300	0.0088	2.8160	0.0900
Mar	61.8141	0.6882	52.2268	8.8991	0.0056	0.1400	0.0098	5.2448	0.1094
Apr	30.5641	0.5191	19.4473	10.5977	0.0045	0.5000	0.0101	1.9360	0.1094
May	49.9648	0.0676	36.2894	13.6078	0.0042	0.4700	0.0070	0.7040	0.1594
Jun	50.8995	0.5987	42.9123	7.3885	0.0048	0.1600	0.0092	0.0000	0.1563
Sub-Total (2023)	319.1248	1.8736	266.7562	50.4949	0.0282	1.5650	0.0569	10.7008	0.6933
Jul	33.1173	0.0000	23.8764	9.2409	0.0107	0.0000	0.0263	0.0000	0.1865
Aug	23.7191	0.1214	15.5295	8.0682	0.0062	0.2700	0.0120	2.8160	0.2912
Sep	19.0242	0.0446	17.0439	1.9357	0.0093	0.0000	0.0168	0.0000	0.1706
Oct	26.0330	2.2207	20.6945	3.1177	0.0025	0.2600	0.0022	5.6320	0.3106
Nov	40.8191	0.0882	36.2573	4.4736	0.0069	0.8600	0.0169	0.0000	0.4663
Dec	16.3710	0.0000	12.6630	3.7081	0.0100	0.2350	0.0063	0.0000	0.4017
Total (2023)	478.2085	4.3485	392.8208	81.0391	0.0738	3.1900	0.1374	19.1488	2.5202
Total accumulated waste quantity	1654.3621	12.2859	1298.4137	336.7689	49.4218	13.2630	0.3835	93.7974	4.0521

Notes:

1. Following assumption is made for calculation:

- i) 1m³ of inert material weight 2.2 tonne;
- ii) 1m³ of non-inert material weight 1.6 tonne;
- iii) 1m³ 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).

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	5.6098	0.0000	1.7477	3.8621	0.0113	0.4700	0.0113	0.0000	0.3599
Apr	3.3904	0.0000	1.5641	1.8263	0.0113	0.4410	0.0113	4.2240	0.3544
May	2.2268	0.0000	0.7182	1.5086	0.0130	0.2300	0.0220	0.0000	0.3088
Jun	2.0695	0.0000	0.5609	1.5086	0.0142	0.3200	0.0283	0.0000	0.3231
Sub-Total (2024)	22.7758	0.0000	8.6806	14.0953	0.0644	2.0010	0.1073	4.2240	2.1119
Jul	1.5382	0.0000	0.2382	1.3000	0.0096	0.0000	0.0164	0.0000	0.3844
Aug	0.8414	0.0000	0.1668	0.6745	0.0048	0.0000	0.0189	4.0480	0.5088
Sep	0.4205	0.0000	0.0323	0.3882	0.0079	0.0000	0.0136	0.0000	0.1325
Oct	0.3818	0.0000	0.1768	0.2050	0.0023	0.0000	0.0142	0.0000	0.0956
Nov	0.6718	0.0000	0.1164	0.5555	0.0000	0.0000	0.0000	3.6608	0.1200
Dec	0.0545	0.0000	0.0273	0.0273	0.0010	0.0000	0.0050	0.0000	0.0775
Total (2024)	26.6840	0.0000	9.4384	17.2458	0.0900	2.0010	0.1754	11.9328	3.4307
Total accumulated waste quantity	1681.0461	12.2859	1307.8521	354.0147	49.5118	15.2640	0.5589	105.7302	7.4828

Notes:

1. Following assumption is made for calculation:

- i) 1m³ of inert material weight 2.2 tonne;
- ii) 1m³ of non-inert material weight 1.6 tonne;
- iii) 1m³ 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).

4. The figure was updated according to the latest data.

Monthly Summary Waste Flow Table (2025)

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
Total (2024)	26.6840	0.0000	9.4384	17.2458	0.0900	2.0010	0.1754	11.9328	3.4307
Jan	0.0977	0.0000	0.0302	0.0675	0.0000	0.0000	0.0000	0.0000	0.0697
Feb	0.2016	0.0000	0.0362	0.1654	0.0000	0.0000	0.0000	0.0000	0.0514
Mar	0.1591	0.0000	0.0155	0.1436	0.0000	0.0000	0.0000	0.0000	0.0594
Apr	0.2073	0.0000	0.0000	0.2073	0.0000	0.0000	0.0000	2.0682	0.0850
May	1.5116	0.0000	0.0000	1.5116	0.0000	0.0000	0.0000	0.0000	0.0303
Jun	0.1160	0.0000	0.0000	0.1160	0.0000	0.0000	0.0000	0.0000	0.0184
Sub-Total (2025)	2.2933	0.0000	0.0818	2.2114	0.0000	0.0000	0.0000	2.0682	0.3142
Jul	0.0596	0.0000	0.0000	0.0596	0.0000	0.0000	0.0000	0.0000	0.0109
Aug	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0046
Sep									
Oct									
Nov									
Dec									
Total (2025)	2.3533	0.0000	0.0818	2.2715	0.0000	0.0000	0.0000	2.0682	0.3298
Total accumulated waste quantity	1683.3995	12.2859	1307.9340	356.2862	49.5118	15.2640	0.5589	107.7984	7.8079

Notes:

1. Following assumption is made for calculation:

- i) 1m³ of inert material weight 2.2 tonne;
- ii) 1m³ of non-inert material weight 1.6 tonne;
- iii) 1m³ 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).

4. The figures were updated according to the latest data and rounded off to 4 decimal places.