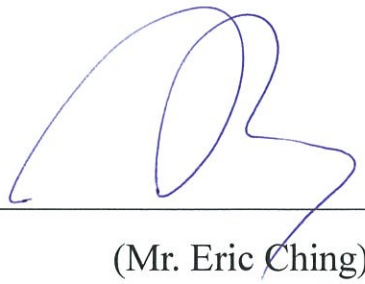
MTR Corporation Limited

HONG KONG SECTION OF GUANGZHOU – SHENZHEN – HONG KONG EXPRESS RAIL LINK

(Environmental Permit No. EP-349/2009/N)

Final Environmental Monitoring and Audit Report (Part 1)

Verified by: 

(Mr. Eric Ching)

Position: Independent Environmental Checker

Date: 22 OCTOBER, 2018

MTR Corporation Limited

HONG KONG SECTION OF GUANGZHOU – SHENZHEN – HONG KONG EXPRESS RAIL LINK

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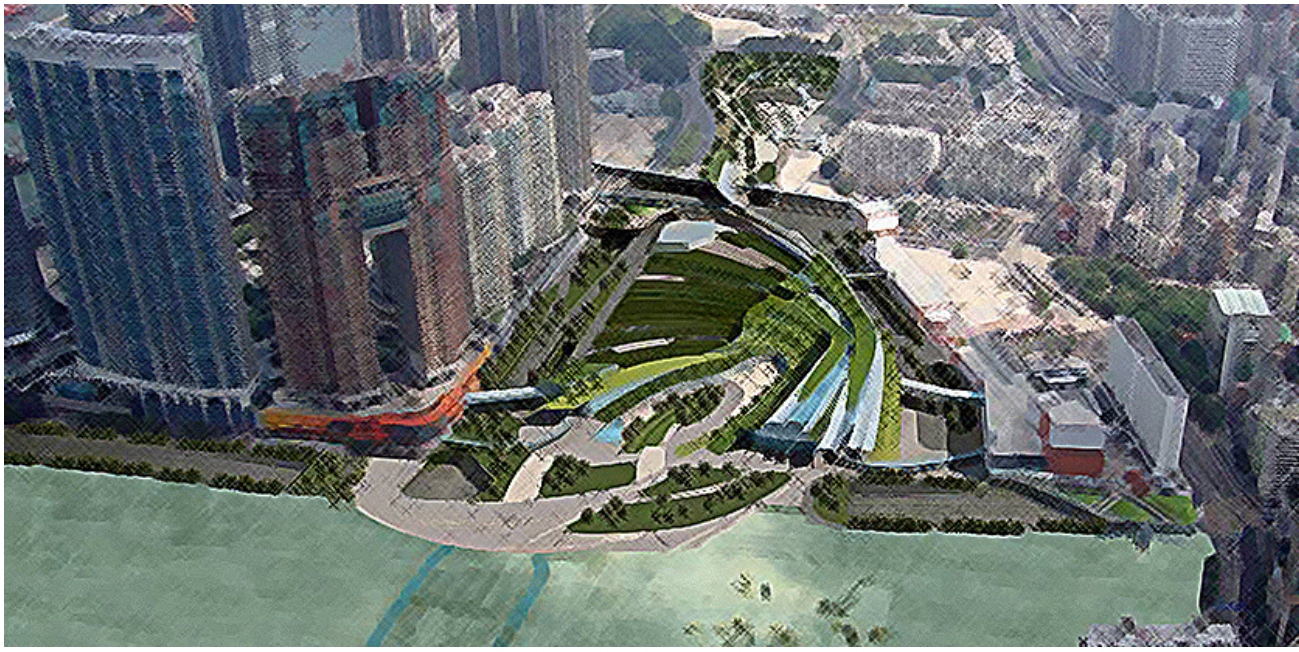
Verified by: _____

(Mr. Raymond Wong)

Position: Environmental Team Leader

Date: 22 October 2018

Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link



Final Environmental Monitoring and Audit Report

(Part 1)

EXECUTIVE SUMMARY

The Hong Kong Section of Guangzhou - Shenzhen - Hong Kong Express Rail Link (hereinafter referred to "the XRL" or "the Project") was awarded to respective contractors in mid-February 2010. The EM&A programme for XRL commenced on 1 March 2010, the commencement date of construction of the Project.

The passenger service of the XRL has been commenced on 23 September 2018. As all the related construction activities that have been completed on 29 September 2018, this final Environmental Monitoring and Audit (EM&A) Report (Part 1) presenting the results of EM&A works undertaken during the period from March 2010 to September 2018 in accordance with the EM&A Manual and the requirement under the Environmental Permit (EP) No. EP-349/2009 and it's subsequently versions (A to N). The latest EP was issued on 20 August 2018.

In view of completion of construction works that have the potential to cause significant environmental impact for the Project, all relevant dust and noise monitoring works have been terminated on or before 29 September 2018, except the noise monitoring around the works area for the reinstatement in Nam Cheong Park.

Apart from the above, regular site inspections for this area (i.e. Works Area T) under the EM&A programme (Part 2) would be maintained until the completion of reinstatement and its subsequent construction activities in Nam Cheong Park since it is the only exception after the commencement of XRL.

Air Quality

Impact air quality monitoring was conducted for 24-hour Total Suspended Particulates (TSP) at 17 air quality monitoring locations in the vicinity of Works Areas in Mai Po (Works Area A) Ngau Tam Mei (Works Area B), Tai Kong Po (Works Area C), Shek Kong (Works Area D), Tse Uk Tsuen, (Works Area E), Pat Heung (Works Area F), Shing Mun (Works Area G), Shek Yam (Works Area H), Kwai Chung (Works Area J), Mei Foo (Works Area L), Nam Cheong (Works Area P, Q and R) and West Kowloon (Works Area V1 and V2) once in every six days throughout the whole construction period in accordance with the EM&A Manual.

The total no. of exceedance for 24-hour TSP for the whole construction period has been summarized in the section of "Environmental Complaints/Exceedance/Non-compliance/ Summons and Prosecution" below.

Airborne Noise

Impact air-borne noise was measured in terms of $L_{Aeq(30min)}$ dB(A) with L_{10} and L_{90} measurements as reference at 34 noise monitoring locations in the vicinity of Works Area in Mai Po (Works Area A), Ngau Tam Mei (Works Area B), Tai Kong Po (Works Area C), Shek Kong (Works Area D), Tse Uk Tsuen, (Works Area E), Pat Heung (Works Area F), Shing Mun (Works Area G), Shek Yam (Works Area H), Kwai Chung, (Works Area J and K), Mei Foo (Works Area L), Nam Cheong (Works Area M, N, O, P, Q, R, S and T) and West Kowloon (Works Area V1 and V2) once every week originally, however the noise monitoring location - Tsuen Wan Lutheran School (CN17) was suspended due to school closure since December 2010. Hence noise measurements as reference at 33 noise monitoring locations have been used throughout the whole construction period.

The section of "Environmental Complaints/Exceedance/Non-compliance/ Summons and Prosecution" should be referred for the total no. of noise exceedance in the whole construction period.

Ground-borne Noise

Impact ground-borne noise was measured in terms of $L_{Aeq(30min)}$ dB(A) with L_{10} and L_{90} measurements as reference at selected ground-borne noise monitoring locations when the TBM cutter head was operating in vicinity.

The section of "Environmental Complaints/Exceedance/Non-compliance/ Summons and Prosecution" should be referred for the total no. of noise exceedance in the whole construction period.

Monitoring of Avifaunal Species

No non-compliance has been identified in the monthly ecological monitoring throughout the construction period of Mai Po Ventilation Building Works Area (MPV), access road to Tai Kong Po Works Area (TPP-1/2/3), Shek Kong Stabling Sidings (SSS-2a/3), Pat Heung Ventilation Building Works Area (PHV-1) and Tse Uk Tsuen (TUW-1/2). The avifaunal monitoring has been ceased since September 2017 due to the completion of construction works at these works areas.

Monitoring of Impact at Fishpond due to Noise

In accordance with the Monitoring and Emergency Response Plan, impact noise monitoring was conducted at fish pond on weekly basis for assessment of noise impact on fishponds.

No non-compliance was recorded in the monitoring at fishpond, and the monitoring has been ceased from November 2017 due to the completion of the major site activities at MPV.

Landscape and Visual

Regular inspections and audits have been conducted by certified Arborist throughout the whole construction period, and it is concluded that the tree protection works being carried out by the civil works contractors and transplanting work contractor are in accordance with the requirements of EP and EIA.

No significant observations have been made throughout the whole construction period.

Environmental Audits

Throughout the whole construction period, regular site inspections attended by representative from MTR and Contractors were carried out at 803A, 803B, 803C, 803D, 810A, 810B, 811A and 811B in West Kowloon, 802, 805 and 820 in Nam Cheong, 821 in Kwai Chung, 822 in Pat Heung, Shing Mun, Shek Yam, Tai Shu Ha Road West Magazine Site, So Kwun Wat Nursery and Magazine Site and Tsing Chau Tsai Barging Point, 823A and 823B in Shek Kong, Tse Uk Tsuen, To Kau Wan stockpiling facility and Rambler Channel Barging Point, 824 in Ngau Tam Mei and Tai Kong Po and 825 in Mai Po. In addition to the regular site inspections, IEC environmental audits attended by IEC, MTR and Contractors were held on a monthly basis.

Environmental Complaints / Exceedance / Non-compliance / Summons and Prosecution

A total of 268 environmental complaints were referred from EPD since commencement of the construction. The complaints were handled in accordance to the EM&A Manual and relevant parties including the Engineer's Representative and IEC.

89 nos. of 24-hour TSP Action Levels and 11 no. of 24-hour TSP Limit Levels exceedance were recorded throughout the whole construction period in 17 nos. of air quality monitoring stations.

42 nos. of exceedance of air-borne noise Action Levels and 127 nos. of exceedance Limit Levels were recorded throughout the whole construction period in 34 nos. of noise monitoring stations.

No exceedance of ground-borne noise measurement was recorded during the TBM tunnelling work in the reporting period.

There were 30 nos. of environmental prosecution received in the whole construction period from March 2010 to September 2018, and 8 out of the 30 have been successfully prosecuted.

9 non-compliances (4 warning letters, 3 yellow forms and 2 non-compliances) have been identified in the construction period

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1 INTRODUCTION

1.1 Project Background

Further to the Government's decision made in April 2008, MTR Corporation (MTR) commenced to plan and design the Hong Kong Section of Guangzhou - Shenzhen - Hong Kong Express Rail Link (hereinafter referred to "the XRL" or "the Project"), which is a committed cross boundary transport infrastructure project.

The XRL would provide high speed rail services between Hong Kong and Guangzhou, and a connection to the national high-speed passenger rail network serving major mainland cities outside of Guangdong province. The Hong Kong section of the XRL is about 26km from new station located in West Kowloon (i.e. West Kowloon Station (WEK)) to the boundary at Huang gang. Along the railway corridor, there would be a total of eight ventilation buildings/ emergency access point (EAP), stabling sidings and a maintenance facility at Shek Kong Stabling Sidings (SSS) and an Emergency Rescue Station (ERS) next to SSS serving the operation of the XRL.

1.2 Project Programme

The Hong Kong Section of Guangzhou - Shenzhen - Hong Kong Express Rail Link (XRL) Project was awarded to respective Contractors for the construction since Feb 2010. All the construction works for the railway operation have been completed and the passenger service for XRL has been commenced on 23 September 2018. The remaining construction works of XRL for the reinstatement of Nam Cheong Park is expected to be completed in Q2 2019 tentatively.

1.3 Coverage of the Final EM&A Report – Part 1

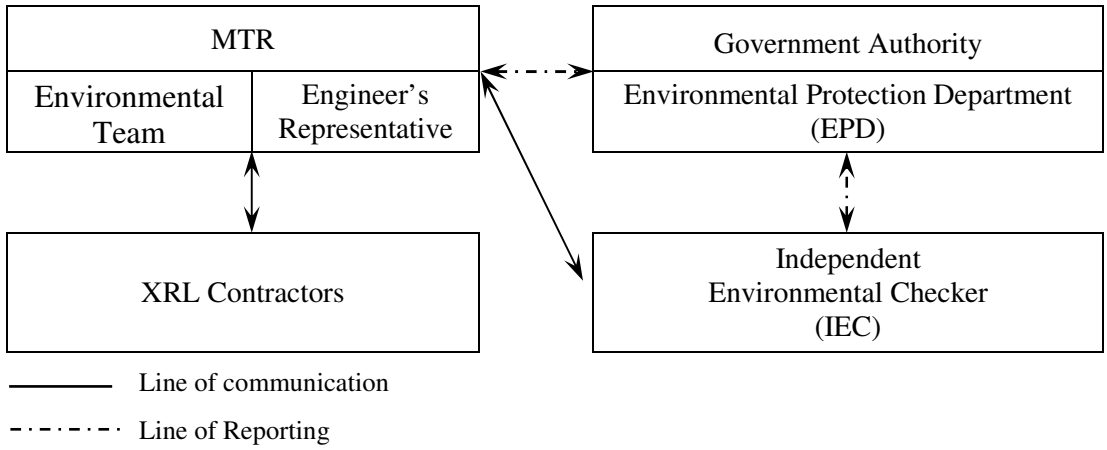
The Environmental Monitoring and Audit (EM&A) programme for the Hong Kong Section of Guangzhou - Shenzhen - Hong Kong Express Rail Link (XRL) Project commenced on 1 March 2010. In considering the completion of construction works of the Project, this Final EM&A Report is prepared to present the results of EM&A works and the impact monitoring for the construction works undertaken by Environmental Team during the period of March 2010 to September 2018. Another Final EM&A Report (Part 2) would be submitted in due course after the completion of the construction works in Nam Cheong Park.

2 PROJECT INFORMATION

2.1 Project Management Organisation and Management Structure

The project management organisation chart is shown in Figure 1. Contacts of key environmental personnel of the Project are shown in Appendix B.

Figure 1 Project Organisation



2.2 Project Works Sites and Areas

The XRL Project works sites and areas are summarized in Table 2-1 and shown in Appendix A. The locations of environmental monitoring stations are indicated in Appendix D. Tables 2-2 and 2-3 shows the details of the active monitoring stations as report in Section 3.1 and 3.2.

Table 2-1 Summary of XRL Project Works Sites and Areas

Contract	Works Area	Description of Works
Nam Cheong		
802	Q	Pile removal and re-provision
805	N, O	Pile removal and re-provision
805	S	Excavation and Pile construction
820/821/811B	Y	Barging Point
810A	Y	Bar bending yard
820	M	Grouting Work at Lai Chi Kok
820	Q	TBM and Pile removal

Contract	Works Area	Description of Works
820	R	Pile removal
820	P	Nam Cheong Ventilation Building
816D	T	Site Office
West Kowloon		
803A/B/C/D	V1	Diaphragm construction, pre-drilling, Bored piling, Utilities diversion and road works
810A	V1	Main Station Structure
810A	Mong Wing Street (MWS)	Material Storage Area
810A	Yick Yuen Site (YY)	Material Storage Area
810A	Austin Road West (ARW)	Material Storage Area
810A	To Wah Road (TWR)	Material Storage Area
810B	V1	Main Station Structure
810B	W	Barging Facilities
810A	V2	Junction between Approach Tunnel and Main Station
811A/810A	U	Site Office
811B	V2	Approach Tunnel
Mei Foo		
820	L	Site Office
810A	L	Skyline Mock-up Area
Kwai Chung		
821	J	Kwai Chung Ventilation Building
810A	J	Material Storage Area
Pat Heung		
822	F	Pat Heung Ventilation Building
Shek Yam		
8217	H	Shek Yam Adit
822	I	Material Storage Area
822	K	Site Office
Shing Mun		

Contract	Works Area	Description of Works
822	G	Shing Mun Ventilation Building
So Kwun Wat		
822	AC	So Kwun Wat Magazine Site and Nursery
Tai Shu Ha Road West Magazine Site		
822	AE	Tai Shu Ha Road West Magazine Site
Tsing Chau Tsai		
822	AG	Barging Point
810A	AG	Material Storage Area
Shek Kong Stabling Sidings		
823A & 823B	D and D1	Shek Kong Stabling Sidings and Emergency Rescue Station
Tse Uk Tsuen		
823A	E	Shaft excavation at Tse Uk Tsuen
Rambler Channel Barging Point		
823B	Z	Barging Point
Ngau Tam Mei		
824	B	Ngau Tam Mei Ventilation Building
Tai Kong Po		
824	C	Tai Kong Po Emergency Access Point
Mai Po		
825	A	Mai Po Ventilation Building
826	A	Mai Po Ventilation Building
Siu Lam Barging Point		
825/810A	AA	Barging Point
To Kau Wan Works Area		
823B	-	Rock/Public Fill Stockpile Area

Table 2-2 Summary of XRL Project Impact Air Quality Monitoring Stations

Monitoring Station ID	Monitoring Location
Air Quality	
AM 1 [2]	Outside No. 142 Mai Po San Tsuen

Monitoring Station ID	Monitoring Location
AM 2 [6]	Yau Tam Mei Village House
AM 3 [4]	Kong Tai Road Village House
AM 4 [2]	No. 306, Sheung Tsuen San Tsuen Village House
AM 5 [1]	Leung Uk Tsuen Squats
AM 6 [2]	630 Sheung Tsuen
AM 7 [2]	Tse Uk Tusen
AM 8 [1]	No. 306, Sheung Tsuen San Tsuen Village House
AM 9 [3]	Sau Shan House, Cheung Shan Estate
AM 10 [5]	Yau Ma Hom Resite Village
AM 11 [7]	Chung Shun Knitting Centre
AM 12 [1]	Po Leung Kuk Tong Nai Kan College
AM 13 [2]	St. Andrew Primary School
AM 14 [2]	Yaumati Catholic Primary School
AM 15 [8]	Podium Floor between Sorrento and The Waterfront
AM 16 [8]	Podium Floor of Tower 3, The Waterfront
AM 17 [8]	Roof of Lift Building of The Victoria Towers

Notes: [1]. Since the major site activities which are likely to have air quality impacts have been completed at the works areas adjacent to AM5, AM8 and AM12, the monitoring at these 3 stations have been ceased in April 2017.

[2]. Since the major site activities which are likely to have air quality impacts have been completed at the works areas adjacent to AM1, AM4, AM6, AM7, AM13 and AM14, the monitoring at these 6 stations have been ceased in late November 2017.

[3]. Since the major site activities which are likely to have air quality impacts have been completed at the works area adjacent to AM9, the monitoring at this station have been ceased in December 2017.

[4]. Since the major site activities which are likely to have air quality impacts have been completed at the works area adjacent to AM3, the monitoring at this station have been ceased in January 2018.

[5]. Since the major site activities which are likely to have air quality impacts have been completed at the works area adjacent to AM10, the monitoring at this station have been ceased in March 2018.

[6]. Since the major site activities which are likely to have air quality impacts have been completed at the works area adjacent to AM2, the monitoring at this station have been ceased in April 2018.

[7]. Since the major site activities which are likely to have air quality impacts have been completed at the works area adjacent to AM11, the monitoring at this station have been ceased in early May 2018.

[8]. Since the major site activities which are likely to have air quality impacts have been completed at the works area adjacent to AM15, AM16 and AM17, the monitoring at these 3 stations have been ceased in end September 2018.

Table 2-3 Summary of XRL Project Impact Noise Monitoring Stations

Monitoring Station ID	Monitoring Location
Noise	
CN 1 [6]	No. 142 Mai Po San Tsuen
CN 2 [6]	Mai Po San Tsuen Village House
CN 3 [10]	Yau Tam Mei Village House
CN 4 [10]	Yau Tam Mei Village House
CN 5 [8]	Kong Tai Road Village House
CN 6 [6]	Kong Tai Road Village House
CN 7 [6]	372 Tai Kong Po Tsuen
CN 8 [6]	DD110 LOT 482, Wang Toi Shan
CN 9 [6]	Leung Uk Tsuen Village House
CN 10 [5]	DD110 LOT 482, Wang Toi Shan
CN 11 [5]	182B, Wang Toi Shan San Tsuen
CN 12 [6]	DD108, Nam Hing Lei, Wing Hing Wai
CN 13 [6]	Tse Uk Tsuen
CN 14 [6]	Tse Uk Tsuen
CN 15 [5]	No. 305B - Sheung Tsuen San Tsuen Village House
CN 16 [5]	DD 114 LOT 1405 Sheung Tsuen
CN 18 [7]	Sau Shan House
CN 19 [9]	Sun Fung Centre
CN 20 [11]	VTC Kwai Chung Training Centre Complex
CN 21 [6]	Po Leung Kuk Tong Nai Kan College
CN 22 [5]	Block I, Lai Chi Kok Reception Centre
CN 23 [4] [7]	HKIVE Haking Wong Waterfront Annex
CN 24 [6]	St. Andrew Primary School
CN 25 [5]	St. Mary's Church Mok Hing Yiu College
CN 26 [5]	Ying Wah College

Monitoring Station ID	Monitoring Location
Noise	
CN 27 [6]	Cheong Shun House, Nam Cheong Estate
CN 28 [13]	Tower 6, Harbour Green
CN 29 [5]	Yaumati Catholic Primary School
CN 30 [12]	Man Cheong Street Refuse Collection Point
CN 31 [3]	Tower 6, Sorrento
CN 32 [12]	Tower 3, The Waterfront
CN 33 [12]	Star Tower, The Arch
CN 34 [12]	The Victoria Towers

Notes: [1]. Due to school closure, monitoring at Tsuen Wan Lutheran School (CN17) was temporarily suspended. Monitoring would be carried out subject to confirmation of noise sensitive use of the building.

[2]. A correction factor (9dB(A)) has been applied at CN19 to take into account the noise barrier effect. The correction factor was agreed with IEC according to Section 3.11 of the EM&A Manual.

[3]. Impact monitoring at Tower 6, Sorrento (CN31) has been temporarily suspended from end of August 2014 due to the objection from the OC of Sorrento has been received in early August 2014. Monitoring at this location would be resumed when an alternative location is determined.

[4]. Due to completion of all works at CN23, monitoring at HKIVE Haking Wong Waterfront Annex (CN23) has been suspended from March 2015.

[5]. Since the major site activities which are likely to have air-borne noise impacts have been completed at the works areas adjacent to CN10, CN11, CN15, CN16, CN22, CN25, CN26 and CN29, particularly some of the works areas have been handed over to Government, the monitoring at these 8 stations have been ceased from April 2017.

[6]. Since the major site activities which are likely to have air-borne noise impacts have been completed at the works areas adjacent to CN1, CN2, CN6, CN7, CN8, CN9, CN12, CN13, CN14, CN17, CN21, CN24 and CN27, particularly some of the works areas have been handed over to Government, the monitoring at these 13 stations have been ceased in November 2017.

[7]. Since the major site activities which are likely to have air-borne noise impacts have been completed at the works areas adjacent to CN18 and CN23, particularly some of the works areas have been handed over to Government, the monitoring at these 2 stations have been ceased in December 2017.

[8]. Since the major site activities which are likely to have air-borne noise impacts have been completed at the works area adjacent to CN5, the monitoring at this station has been ceased in January 2018.

[9]. Since the major site activities which are likely to have air-borne noise impacts have been completed at the works area adjacent to CN19, the monitoring at this station has been ceased in March 2018.

[10]. Since the major site activities which are likely to have air-borne noise impacts have been completed at the works area adjacent to CN3 and CN4, the monitoring at these stations have been ceased in April 2018.

[11]. Since the major site activities which are likely to have air-borne noise impacts have been completed at the works area adjacent to CN20, the monitoring at these stations have been ceased in late May 2018.

[12]. Since the major site activities which are likely to have air-borne noise impacts have been completed at the works area adjacent to CN30, CN32, CN33 and CN34, the monitoring at these stations have been ceased in end September 2018.

[13]. Since the site activities which are likely to have air-borne noise impacts will continue at the works area adjacent to CN28, the monitoring at this station will continue until the work completion.

2.3 Summary of EM&A Requirements

The EM&A programme mainly requires environmental monitoring for air quality, noise, landscape and visual, water quality and waste management as specified in the EM&A Manual.

A summary of impact EM&A requirements as applicable to this EM&A Report is presented in Table 2-4

Table 2-4 Summary of XRL Project Impact EM&A Requirements

Parameters	Description	Locations	Monitoring Frequency	Duration
Air Quality	24-hr TSP	Shown in Table 2-2	Once in every 6 days	Construction Stage
Noise	$L_{Aeq(30min)}$	Shown in Table 2-3	Once a week	Construction Stage
Landscape and Visual	On-site Audit	Active works areas	Monthly	Construction Stage
Waste	On-site Audit	Active works areas	Weekly	Construction Stage
Wastewater	On-site Audit	Active works areas	Weekly and in accordance to the requirement under discharge licences	Construction Stage
General Site Conditions	Environmental Site Inspection and Audit	Active works areas	Weekly (ET) & Monthly (IEC)	Construction Stage

Environmental Quality Performance Limits for air quality and noise are shown in Appendix E.

The Event Action Plan for air quality and noise are shown in Appendix F.

2.4 Implementation of Environmental Mitigation Measures

The XRL Project Civil Works Contractors are required to implement the mitigation measures as specified in the EP, EIA Report and EM&A Manual. During the regular environmental site inspections, the Contractors' implementation of mitigation measures were inspected and reviewed. A schedule of the implementation of environmental mitigation measures recommended in the EIA Report is given in Appendix C.

2.5 Construction Activities in the Reporting Period

Major construction activities carried out by XRL Civil Works Contractors during the reporting period include:

Contract 802 - Works Area Q

- Diversion of existing utilities completed
- Bored pile removal work for future property development completed
- H-pile extraction completed
- Excavation work completed
- Pre-drilling and Re-provisioning completed
- Reinstatement completed

Contract 803A - Works Area V1

- Diversion of Utilities (Site A) completed
- Major excavation works completed
- Construction of Diaphragm Walls (Site A), including formwork, reinforcement fixing and concreting completed

Contract 803B - Works Area V1

- Diversion of Utilities (Site A - North) completed
- Excavation works completed
- Construction of Piles (Site A - North), including drilling, reinforcement fixing and concreting completed

Contract 803C - Works Area V1

- Diversion of Utilities (Site A - South) completed
- Major excavation works completed

- Construction of Piles (Site A - South), including borehole drilling, reinforcement fixing and concreting completed

Contract 803D - Works Area V1

- Diversion of Utilities completed
- Excavation works completed
- Construction of Diaphragm Walls and Piles (WKCD), including formwork, reinforcement fixing and concreting completed

Contract 805 - Works Areas N, O, S

- Diversion of existing utilities completed
- Obstruction Removal at Sham Mong Road completed
- Bridge re-provisioning completed
- Reinstatement completed

Contract 810A - Works Areas J, L, U, V1, V2, Y, AA, AG, MWS, YY, ARW, TWR

- Excavation and Site Formation completed
- Bored piles and Socketted H-piles completed
- Cruciform columns completed
- Sheet Piling and Removal completed
- Drill and blasting work completed
- Station Substructure and Superstructure completed
- Material Storage completed

Contract 810B - Works Area V1

- Excavation and Site Formation completed
- Bored piles completed
- Sheet Piling and Removal completed
- Station and Ventilation Structure completed
- Backfilling completed
- Reinstatement completed

Contract 810B - Works Area W

- Operation of Barging Facilities completed
- Dismantling of Barging Facilities completed
- Reinstatement completed

Contract 811A - Works Area U

- Site Office completed

Contract 811A - Works Area V2

- Diversion of existing utilities completed
- Major excavation completed
- Steel struts, walers, lateral support and removal work completed
- Extraction Shaft construction, including formwork, reinforcement and concreting completed

Contract 811B - Works Area V2, Y

- Pre-bored H-piles, Flood protection wall installation completed
- Box culverts reinstatement works completed
- Utilities diversion and re-provision completed
- Bulk excavation completed
- Station structure construction completed
- Road diversion and re-provisioning completed
- Operation of Barging Point completed
- Reinstatement completed

Contract 820 - Works Areas L, M, P, Q, R, Y

- Cut and cover tunnel construction completed
- TBM operation completed
- Piling and Drainage works completed
- Road reinstatement completed

Contract 821 - Works Areas J, Y

- Tunnel blasting work completed
- Breaking and drilling work inside the tunnel completed
- Operation of Barging Point completed
- Construction of Ventilation Building completed
- Material Storage completed
- Reinstatement completed

Contract 822 - Works Areas F, G, I, K, AC, AE, AG

- Bulk excavation completed
- Tunnel construction completed
- Construction of Ventilation Building completed
- Site Office completed
- Reinstatement completed

Contract 823A - Works Areas D, D1 and E

- Shaft construction completed
- TBM operation completed
- Tunnel construction completed
- Reinstatement completed

Contract 823B - Works Areas D, D1, Z and To Kau Wan

- Cut and cover tunnel construction completed
- Stabling sidings and associated maintenance buildings completed
- Emergency rescue siding and associated plant buildings completed
- Site office completed
- Material storage completed
- Reinstatement completed

Contract 824 - Works Areas B and C

- Bulk excavation completed
- Tunnel construction completed
- Construction of Ventilation Building completed
- Reinstatement completed

Contract 825 - Works Area A and AA

- TBM operation completed
- Tunnel construction completed
- Construction of Ventilation Building completed
- Site Office completed
- Reinstatement completed

Contract 826 - Works Area A

- TBM operation completed
- Tunnel construction completed
- Reinstatement completed

Contract 8217 - Works Area H

- Backfilling work of Shek Yam Construction Adit completed

3 IMPACT MONITORING AND RESULTS

3.1 Air Quality

3.1.1 Air Quality Monitoring

The sampling procedure follows to that described Part 50 Chapter 1 Appendix B, Title 40 of the Code of Federal Regulations of the U.S. Environmental Protection Agency. TSP is sampled by drawing air through a conditioned, pre-weighed filter paper inside the high volume sampler at a controlled rate. After 24-hour sampling the filter paper with retained particles shall be collected and returned to HOKLAS accredited laboratory (ALS Technichem (HK) Pty Ltd) for drying in a desiccators followed by accurate weighing. TSP levels are calculated from the ratio of the mass of particulate retained on the filter paper to the total volume of air sampled.

The samplers shall be properly maintained. Prior to dust monitoring commencing, appropriate checks shall be made to ensure that all equipment and necessary power supply are in good working condition.

3.1.2 Monitoring Methodology and Calibration

Monitoring was undertaken to establish for 24-hour Total Suspended Particulates (TSP) at the monitoring locations in the vicinity of the Works Areas as shown in Section 2.2 above by using a high volume sampler (HVS) according to Part 50 Chapter 1 Appendix B, Title 40 of the Code of Federal Regulations of the U.S. EPA.

The flow rate of the high volume sampler with mass flow controller was calibrated using an orifice calibrator. Initial calibration (five points) was conducted upon installation and prior to commissioning. Calibration was carried out every six months.

3.1.3 Monitoring Results

Monitoring results of 24-hour TSP are presented in Appendix G as graphical plot. The statistical analyses of air quality monitoring data for the dust monitoring stations within the reporting periods are summarized in Table 3-1 below.

Table 3-1 Statistical Analysis of Air Quality Monitoring Data

Number of measurement	Average Level ($\mu g/m^3$)	Maximum Level ($\mu g/m^3$)	Minimum Level ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit level ($\mu g/m^3$)
AM01 - Outside No. 142 Mai Po San Tsuen					
477	75.9	434.6	9.2	217.4	260.0
AM02 - Yau Tam Mei Village House					
486	51.0	174.8	9.7	179.4	260.0
AM03 - Kong Tai Road Village House					
489	83.7	313.2	3.1	154.7	260.0
AM04 - Wan Toi Shan					
417	55.9	199.4	5.0	148.6	260.0
AM05 - Leung Uk Tsuen Squats					
390	54.9	255.2	9.9	152.0	260.0
AM06 - Sheung Tsuen					
432	52.1	230.5	4.0	145.6	260.0
AM07 - Tse Uk Tsuen					
438	45.8	215.7	4.8	149.8	260.0
AM08 - Sheung Tsuen San Tsuen					
413	59.2	266.5	7.8	158.1	260.0
AM09 - Sau Shan House, Cheung Shan Estate					
448	46.5	167.9	6.3	171.2	260.0
AM10 - Yau Ma Hom Resite Village					
514	51.9	410.8	3.2	174.9	260.0
AM11 - Chung Shun Knitting Centre					
473	51.8	202	4.8	160.3	260.0
AM12 - Po Leung Kuk Tong Nai Kan College					
385	53.4	174.9	7.8	162.5	260.0
AM13 - St. Andrew Primary School					
472	55.7	192.8	8.1	180.3	260.0

Number of measurement	Average Level ($\mu g/m^3$)	Maximum Level ($\mu g/m^3$)	Minimum Level ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit level ($\mu g/m^3$)
AM14 - Yaumati Catholic Primary School (Hoi Wang Road)					
464	54.0	170.9	6.0	158.2	260.0
AM15 - Between Sorrento and Waterfront					
551	56.7	226.7	8.8	168.8	260.0
AM16 - Podium next to Tower 3, The Waterfront					
550	59.2	172.7	5.1	155.9	260.0
AM17 - Victoria Towers					
548	60.7	338.3	4.0	179.3	260.0

89 nos. of 24-hour TSP Action Levels and 11 no. of 24-hour TSP Limit Levels exceedances were recorded in the reporting periods. Investigation of those exceedances found that all of them were affected by the ambient air quality condition and were non-Project related, hence it is concluded that the construction activities did not have a noticeable adverse effect on the general air quality from the XRL Project Works Areas.

3.2 Air-borne Noise

3.2.1 Noise Monitoring

Sound level meters - B&K 2250 which in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications, as referred to the Technical Memorandum (TM) issued under the NCO were used for carrying out the impact air-borne noise monitoring in the construction stage.

The B&K 2250 sound level meters and calibrator B&K 4231 are verified by the certified laboratory or manufacturer at a biennial interval to ensure they perform to the same level of accuracy as stated in the manufacturer's specifications

3.2.2 Monitoring Methodology and Calibration

Immediately prior to and after each series of measurements, the accuracy of the sound level meter was checked by using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if

the difference between calibration levels obtained before and after the noise measurement is less than 1.0 dB.

Periods of prolonged or repeated overloading of the sound level meter detector were avoided by setting the meter with adequate headroom prior to commencing measurements. Measurements were recorded to the nearest whole dB, with values of 0.5 or more being rounded up.

3.2.3 Monitoring Results

Impact air-borne noise monitoring of $L_{Aeq(30min)}$ was undertaken during the construction stage in accordance with the EM&A Manual at the noise monitoring stations shown in Section 2.2 above between 0700 and 1900 hours on normal weekdays at a frequency of once per week when construction activities were underway.

Monitoring results of measured air-borne noise are presented in Appendix H as graphical presentations. The statistical analyses of measured noise levels data for the noise monitoring stations within the reporting periods are summarized in Table 3-2 below.

Table 3-2 Statistical Analysis of Air-borne Noise Monitoring Data

Number of measurement	Average Noise Level (dB(A))	Maximum Noise Level (dB(A))	Minimum Noise Level (dB(A))	Limit level (dB(A))
CN01 - No.142 Mai Po San Tsuen				
139	66.4	75.3	60.0	75.0
CN02 - Mai Po San Tsuen Village House				
402	68.7	79.7	51.0	75.0
CN03 - Yau Tam Mei Village House				
389	60.2	74.0	35.0	75.0
CN04 - Yau Tam Mei Village House				
391	59.4	74.5	44.0	75.0
CN05 - Kong Tai Road Village House				
378	64.3	77.0	51.0	75.0

Number of measurement	Average Noise Level (dB(A))	Maximum Noise Level (dB(A))	Minimum Noise Level (dB(A))	Limit level (dB(A))
CN06 - Kong Tai Road Village House				
371	64.7	83.0	50.0	75.0
CN07 - House 93, Seasons Villas				
358	65.4	75.0	43.0	75.0
CN08 - DD110 LOT 482, Wang Toi Shan				
365	72.0	86.0	48.0	75.0
CN09 - Leung Uk Tsuen Village House				
366	71.8	96.0	54.0	75.0
CN10 - Leung Uk Tsuen Squats				
369	63.4	75.3	38.0	75.0
CN11 - 182B, Wang Toi Shan San Tsuen				
322	63.0	73.0	50.0	75.0
CN12 - DD108, Nam Hing Lei, Wing Hing Wai				
356	63.2	79.0	43.0	75.0
CN13 - Tse Uk Tsuen				
361	62.2	73.0	42.0	75.0
CN14 - Tse Uk Tsuen				
362	61.5	73.0	47.0	75.0
CN15 - No.306-Sheung Tsuen San Tsuen Village House				
324	68.0	81.0	57.0	75.0
CN16 - DD114 LOT 1405 Sheung Tsuen				
369	63.3	77.0	46.0	75.0
CN17 - Tsuen Wan Lutheran School				
21	63.7	70.0	58.0	75.0
CN18 - Sau Shan House, Cheung Shan Estate				
408	64.1	77.0	55.0	75.0
CN19 - Sun Fung Center, 88 Kwok Shui Road				
410	67.6	75.0	53.0	75.0

Number of measurement	Average Noise Level (dB(A))	Maximum Noise Level (dB(A))	Minimum Noise Level (dB(A))	Limit level (dB(A))
CN20 - VTC Kwai Chung				
384	68.1	73.0	58.0	75.0
CN21 - Po Leung Kuk Tong Nai Kan College				
368	68.6	77.0	52.0	75.0
CN22 - Block I, Lai Chi Kok Reception Centre				
340	72.7	75.0	68.0	75.0
CN23 - HKIVE Haking Wong Waterfront Annex				
241	74.3	87.0	61.0	75.0
CN24 - St. Andrew Primary School				
388	66.8	70.1	57.0	75.0
CN25 - St. Mary∗s Church Mok Hing Yiu College				
383	68.4	74.0	51.7	75.0
CN26 - Ying Wah College				
359	68.4	75.0	53.0	75.0
CN27 - Cheong Shun House, Nam Cheong Estate				
273	66.1	71.6	62.4	75.0
CN28 - Tower 6, Harbour Green				
- Monitoring will continue at this station				
CN29 - Yaumati Catholic Primary School (Hoi Wang Road)				
387	68.2	79.4	54.0	75.0
CN30 - Man Cheong Street Refuse Collection Point				
446	68.2	75.5	60.0	75.0
CN31 - Tower 6, Sorrento				
234	73.3	77.0	63.0	75.0
CN32 - Podium next to Tower 3, The Waterfront [1]				
450	75.2	85.3	66.0	75.0
CN33 - Star Tower, The Arch				
449	74.0	80.0	62.0	75.0

Number of measurement	Average Noise Level (dB(A))	Maximum Noise Level (dB(A))	Minimum Noise Level (dB(A))	Limit level (dB(A))
CN34 - Victoria Towers				
449	71.9	75.2	62.0	75.0

Notes: [1]. as the average noise level is equal to or lower than the background noise level, it is not classified as noise exceedance.

In total, 456 nos. of air-born noise (both Action and Limit Levels) exceedances were recorded in the reporting periods. However only 42 nos. of exceedance of air-borne noise Action Levels and 127 no. of exceedance Limit Levels were found related to XRL Project. Relevant actions, such as enhance the noise control by adding additional acoustic sheets or cover; rearrange the noisy works to be conducted in later of the day and etc., have been taken by the related Contractors to control the noise impact in accordance with the recommendations in EIA report and EM&A Manual.

Therefore the overall performance could be concluded that the construction activities did not cause significant air-borne noise impact from the XRL Project Works Areas.

3.3 Ground-borne Noise

Ground-borne noise measurement had been conducted for TBM tunnelling works in accordance with Environmental Permit No. EP-349/2009 Clause 2.22 and the approved Construction Ground-borne Noise Monitoring Plan as per the requirement in Section 4.15 of the EM&A Manual.

There was no exceedance in ground-borne noise measurements recorded in the reporting period and all TBM tunnelling work had been completed in early 2015.

Table 3-3 Statistical Analysis of Ground-borne Noise Monitoring Data

Number of measurement	Average Noise Level (dB(A))	Maximum Noise Level (dB(A))	Minimum Noise Level (dB(A))	Limit level (dB(A))
First Drive (Sep 2012 - Feb 2013 & Aug 2013 - Sep 2013)				
GN3 - Yaumati Catholic Primary School (Hoi Wang Road)				
7	50.1	61.9	38.0	65.0

Number of measurement	Average Noise Level (dB(A))	Maximum Noise Level (dB(A))	Minimum Noise Level (dB(A))	Limit level (dB(A))
GN5 - Tower 5, Park Avenue				
14	51.4	67.7	41.5	65.0
GN07 - Tai Fung Building (Block F) Cosmopolitan Estates				
21	50.3	68.9	39.0	65.0
GN08 - Chung Yew Building				
21	53.2	73.7	35.5	65.0
GN31 - DD110 Lot 482, Wang Toi Shan				
76	46.6	64.8	28.6	65.0
Second Drive (Jun 2014 - Sep 2014 & Nov 2014 - Jan 2015)				
GN3 - Yaumati Catholic Primary School (Hoi Wang Road)				
9	48.4	59.6	37.1	65.0
GN5 - Tower 5, Park Avenue				
12	46.9	61.2	39.3	65.0
GN07 - Tai Fung Building (Block F) Cosmopolitan Estates				
15	48.6	62.1	40.4	65.0
GN08 - Chung Yew Building				
7	45.7	56.2	36.1	65.0
GN31 - DD110 Lot 482, Wang Toi Shan				
36	49.3	79.6	29.8	65.0

3.4 Ecological Monitoring

3.4.1 Ecological Monitoring on Avifaunal Communities

Ecological monitoring had been conducted at Works Area in MPV, TPP, SSS/ERS, TUW and PHV monthly during the construction stage. Avifaunal communities had been surveyed quantitatively by transect count and/or point count method covering the vicinity of the Works Areas. Birds had been heard or seen within the survey area have been identified to species level and counted. Bird species and their abundance have been recorded during the avifauna monitoring and presented in the Month EM&A Reports.

The impact monitoring results have been compared to the baseline data collected before construction. Seasonal fluctuations have been observed during the construction stage of the Project, no project-related impact was observed.

3.4.2 Monitoring of impact at fishpond due to noise/vibrations

Weekly air-borne noise monitoring was conducted when there were project-related construction activities being undertaken within 300m from the monitoring location nearby the fishponds in Mai Po, in accordance with the Monitoring and Emergency Response Plan. There was no project-related exceedance from the noise monitoring at the fishponds.

3.5 Landscape and Visual

Monitoring of the implementation of the tree protection measures during construction phase has been conducted in accordance with the requirements of EP condition 2.15 (iv). Landscape and visual monitoring and auditing have been conducted in accordance with the requirement in Section 5.6 of the EM&A Manual throughout the construction stage.

3.5.1 Monitoring Requirement

A Certified Arborist was employed. Inspections and audits were conducted by the Certified Arborist, and it is found that the tree protection works being carried out by the civil works and transplanting contractors had been in accordance with EP/EIA.

Monitoring of the implementation of landscape and visual aspect including the tree protection measures during construction phase was conducted in accordance with the requirements of EP condition 2.15 and Section 5.6 of the EM&A Manual.

3.5.2 Audit Result

The Certified Arborist or his representatives conducted landscape and visual inspections for the implementation of landscape and visual mitigation measures in monthly basis during the construction stage. No non-compliance had been recorded in the reporting period.

3.6 Cultural Heritage

3.6.1 Archaeology

Archaeological rescue excavation was conducted in Works Area D from March to July 2011 and the Further Archaeological Investigation Report – Shek Kong Stabling Sidings was submitted on 21 July 2011 in accordance with EP Condition 2.38 and the Archaeological Action Plan (AAP). The Final Archaeological Rescue Excavation Report was submitted in April 2014 to preserve archaeological deposit by record in accordance with the AAP. Selected artefacts with research significance were handover to AMO while the remaining unearthed artefacts were buried on site in August 2012 with supervision of qualified archaeologist and AMO curator. No further follow-up actions were required.

3.6.2 Built Heritage

Vibration monitoring at the identified vibration sensitive historical buildings (Ex-Lai Chi Kok Hospital) within 100m in plan of the blast location in accordance with the requirements stipulated in Chapter 6 of the EM&A Manual was completed in 2013. From the monitoring results obtained in the reporting period, the measured PPV were far below the PPV criterion of 25mm/s. As such, it is considered that there was no adverse indirect vibration impact on the vibration sensitive historical buildings due to the use of drill and blast method for the tunnel construction.

3.7 Landfill Gas

Daily landfill gas monitoring has been conducted during the construction of the tunnels within the Ngau Tam Mei Landfill (NTML) consultation zone, and weekly landfill gas monitoring has been conducted after the completion of tunnel construction until June 2018 (i.e. 3 months before the commencement of the Project operation). There was no exceedance recorded during the construction and post construction stage.

3.8 Waste Management

Mitigation measures on waste management had been implemented in accordance with the requirements of the EM&A Manual and the Waste Management Plans for the respective civil works contracts submitted under EP. Suitable C&D materials were reused on-site or at other local projects such as The Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Boundary Crossing Facilities and Tuen Mun Chek Lap Kok Link. Alternatively Taishan, mainland China was also a disposal outlet for reuse.

The remaining C&D materials and non-inert wastes were disposed at the public filling reception facilities and the landfills respectively. The quantities disposed during construction period are summarized in the following Table 3-4.

Table 3-4 Statistical Analysis of construction waste generated and disposed

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Contract 802 (Contract completed in October 2016)				
May 2010	20.00	-	0.00	0
Jun 2010	370.40	-	0.00	0
Jul - Sep 2010	886.10	-	34.90	0
Oct - Dec 2010	610.38	-	5.61	0
Jan - Mar 2011	1,186.30	-	6.10	0
Apr - Jun 2011	8,832.00	-	11.10	200
Jul - Sep 2011	7,982.00	-	24.00	200
Oct - Dec 2011	11,342.00	-	9.00	2,400
Jan - Mar 2012	15,423.00	-	9.00	1,600
Apr - Jun 2012	15,574.00	-	6.00	1,000
Jul - Sep 2012	10,939.00	-	8.00	1,600
Oct - Dec 2012	17,124.00	-	9.00	3,600
Jan - Mar 2013	19,520.00	-	7.35	3,200
Apr - Jun 2013	18,395.00	-	14.00	600
Jul - Sep 2013	11,637.00	-	8.00	800
Oct - Dec 2013	5,931.00	-	15.00	1,400
Jan - Mar 2014	2,587.00	-	7.00	2,000
Apr - Jun 2014	3,710.00	-	5.00	800
Jul - Sep 2014	2,781.00	-	12.00	0
Oct - Dec 2014	9,800.00	-	8.00	0
Jan - Mar 2015	41.00	-	14.00	0
Apr - Jun 2015	994.00	-	14.00	0

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Jul - Sep 2015	856.00	-	85.00	800
Oct - Dec 2015	6.67	-	14.49	0
Jan - Mar 2016	13.52	-	7.95	0
Apr - Jun 2016	0.00	-	3.10	0
Jul - Sep 2016	0.00	-	0.00	0
Oct 2016	0.00	-	0.00	0
Cumulative	166,561.37	-	337.60	20,200
Contract 803A (Contract completed in January 2012)				
Mar 2010	0.00	-	31.40	0
Apr - Jun 2010	17,134.00	-	53.80	1,000
Jul - Sep 2010	42,539.80	-	94.80	0
Oct - Dec 2010	25,426.80	-	69.50	1,000
Jan - Mar 2011	38,748.00	-	61.30	1,000
Apr - Jun 2011	19,149.90	-	49.50	2,400
Jul - Sep 2011	1,465.90	-	46.30	800
Oct - Dec 2011	375.40	-	64.20	0
Jan 2012	0.00	-	0.00	0
Cumulative	144,839.80	-	470.80	6,200
Contract 803B (Contract completed in October 2011)				
Apr - Jun 2010	3,844.40	-	15.20	0
Jul - Sep 2010	21,080.50	-	32.10	400
Oct - Dec 2010	25,947.20	-	30.46	400
Jan - Mar 2011	16,159.90	-	121.60	0
Apr - Jun 2011	8,861.00	-	15.90	0
Jul - Sep 2011	8,704.20	-	46.70	0
Oct 2011	244.10	-	2.20	0

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Cumulative	84,841.30	-	264.16	800
Contract 803C (Contract completed in February 2011)				
Mar 2010	2,484.20	-	0.00	0
Apr - Jun 2010	31,793.10	-	94.20	0
Jul - Sep 2010	33,775.50	-	129.90	0
Oct - Dec 2010	13,519.00	-	113.00	0
Jan 2011	0.00	-	0.00	0
Feb 2011	0.00	-	0.00	400
Cumulative	81,571.80	-	337.10	400
Contract 803D (Contract completed in August 2011)				
Mar 2010	3,195.20	-	9.40	0
Apr - Jun 2010	22,265.70	-	30.41	0
Jul - Sep 2010	68,993.30	-	77.50	2,800
Oct - Dec 2010	60,769.90	-	36.07	3,000
Jan - Mar 2011	18,853.00	-	39.50	1,000
Apr - Jun 2011	3,348.40	-	1.30	800
Jul 2011	0.00	-	0.00	0
Aug 2011	0.00	-	0.00	0
Cumulative	177,425.50	-	194.18	7,600
Contract 805 (Contract completed in February 2016)				
Sep 2010	21.00	-	3.30	0
Oct - Dec 2010	711.00	-	10.79	0
Jan - Mar 2011	983.70	-	10.10	0
Apr - Jun 2011	2,048.60	-	0.00	0
Jul - Sep 2011	5,686.40	-	0.00	0

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Oct - Dec 2011	2,511.60	-	0.00	0
Jan - Mar 2012	658.38	-	2.00	0
Apr - Jun 2012	2,924.60	-	10.30	20
Jul - Sep 2012	2,123.50	-	31.00	0
Oct - Dec 2012	1,612.82	-	0.00	30
Jan - Mar 2013	330.94	-	4.53	50
Apr - Jun 2013	1,506.63	-	6.40	0
Jul - Sep 2013	588.64	-	0.00	30
Oct - Dec 2013	324.12	-	0.00	0
Jan - Mar 2014	10.52	-	2.58	201
Apr - Jun 2014	0.00	-	0.00	0
Jul - Sep 2014	0.00	-	0.00	0
Oct - Dec 2014	0.00	-	0.00	0
Jan - Mar 2015	0.00	-	0.00	0
Apr - Jun 2015	0.00	-	0.00	0
Jul - Sep 2015	0.00	-	0.00	0
Oct - Dec 2015	0.00	-	0.00	0
Jan 2016	0.00	-	0.00	0
Feb 2016	0.00	-	0.00	0
Cumulative	22,042.45	-	81.00	331
Contract 810A (Contract completed in September 2018)				
Dec 2011	762.50	0.00	0.90	0
Jan - Mar 2012	46,714.30	24,510.77	42.90	0
Apr - Jun 2012	106,644.00	112,713.07	141.90	560
Jul - Sep 2012	343,532.30	84,259.00	522.20	7
Oct - Dec 2012	241,078.50	73,665.10	205.80	0
Jan - Mar 2013	263,515.80	58,190.60	373.70	12

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Apr - Jun 2013	178,549.30	14,550.40	511.30	0
Jul - Sep 2013	223,326.33	30,461.60	475.70	13
Oct - Dec 2013	226,328.82	29,817.50	508.00	1,722
Jan - Mar 2014	116,425.39	17,716.60	755.30	803
Apr - Jun 2014	129,151.58	14,898.64	1,238.60	1,050
Jul - Sep 2014	126,914.48	63,600.85	2,035.00	1,600
Oct - Dec 2014	115,093.74	85,593.09	2,504.60	216
Jan - Mar 2015	232,510.20	33,068.05	2,006.47	2,000
Apr - Jun 2015	243,796.28	18,809.16	2,357.16	1,683
Jul - Sep 2015	186,820.27	919.64	2,682.44	0
Oct - Dec 2015	91,622.41	0.00	4,887.21	3,400
Jan - Mar 2016	72,181.90	105.34	5,782.51	2,351
Apr - Jun 2016	49,622.91	185.25	5,912.26	2,611
Jul - Sep 2016	28,006.90	0.00	1,188.11	652
Oct - Dec 2016	17,326.20	0.00	203.93	0
Jan - Mar 2017	22,209.50	0.00	278.69	250
Apr - Jun 2017	606.21	0.00	295.22	0
Jul - Sep 2017	12,086.10	0.00	233.62	250
Oct - Dec 2017	1,459.85	0.00	126.93	0
Jan - Mar 2018	8,012.05	0.00	48.97	0
Apr - Jun 2018	10,732.57	0.00	3,047.30	1,820
Jul - Sep 2018	1,465.16	0.00	159.36	2,040
Cumulative	3,096,495.55	663,064.66	38,526.08	23,039
Contract 810B (Contract completed in June 2018)				
Mar 2011	14,521.00	0.00	0.20	0
Apr - Jun 2011	193,551.00	0.00	91.00	0
Jul - Sep 2011	40,975.00	0.00	123.10	480

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Oct - Dec 2011	315,442.00	0.00	251.00	800
Jan - Mar 2012	455,638.00	53,551.54	126.50	800
Apr - Jun 2012	310,547.00	130,929.59	580.70	640
Jul - Sep 2012	167,024.00	122,670.22	221.70	0
Oct - Dec 2012	118,774.00	310,909.02	499.80	1,440
Jan - Mar 2013	63,951.00	92,303.26	284.80	0
Apr - Jun 2013	109,880.00	37,754.05	325.30	0
Jul - Sep 2013	109,669.00	22,724.51	440.00	1,120
Oct - Dec 2013	67,114.40	10,798.80	641.80	0
Jan - Mar 2014	75,483.00	4,353.13	646.50	0
Apr - Jun 2014	64,252.00	9.71	746.30	0
Jul - Sep 2014	46,023.76	739.72	1,106.30	400
Oct - Dec 2014	55,939.08	0.00	1,327.00	1,200
Jan - Mar 2015	129,887.03	182.08	1,452.14	5,125
Apr - Jun 2015	118,876.74	7,492.38	1,731.22	200
Jul - Sep 2015	129,432.93	5,124.40	1,428.54	0
Oct - Dec 2015	85,140.61	0.00	4,598.44	0
Jan - Mar 2016	16,108.21	0.00	1,818.39	0
Apr - Jun 2016	18,057.60	0.00	2,905.80	0
Jul - Sep 2016	11,279.30	0.00	3,968.17	0
Oct - Dec 2016	4,689.70	701.24	1,346.92	0
Jan - Mar 2017	4,723.29	0.00	1,689.43	0
Apr - Jun 2017	7,809.70	0.00	1,443.32	0
Jul - Sep 2017	9,106.71	0.00	581.19	0
Oct - Dec 2017	86.16	0.00	116.90	0
Jan - Mar 2018	0.00	0.00	153.33	0
Apr - Jun 2018	0.00	0.00	51.63	0

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Cumulative	2,743,982.22	800,243.65	30,697.42	12,205
Contract 811A (Contract completed in October 2016)				
Jun 2010	0.00	0.00	0.00	0
Jul - Sep 2010	7,842.00	0.00	36.00	0
Oct - Dec 2010	31,599.48	0.00	100.63	0
Jan - Mar 2011	33,210.40	0.00	67.00	200
Apr - Jun 2011	23,435.10	0.00	61.50	800
Jul - Sep 2011	27,126.80	0.00	161.70	36
Oct - Dec 2011	45,558.06	0.00	105.37	0
Jan - Mar 2012	37,563.29	0.00	91.00	599
Apr - Jun 2012	21,330.13	11,506.13	61.30	0
Jul - Sep 2012	29,835.23	13,408.64	111.45	410
Oct - Dec 2012	19,870.33	32,337.41	101.46	800
Jan - Mar 2013	51,207.39	3,889.89	58.33	18
Apr - Jun 2013	34,452.44	0.00	147.32	400
Jul - Sep 2013	10,804.14	0.00	200.29	200
Oct - Dec 2013	6,210.11	0.00	187.22	810
Jan - Mar 2014	3,241.94	812.11	175.37	0
Apr - Jun 2014	4,045.65	0.00	183.29	1
Jul - Sep 2014	514.40	0.00	330.42	220
Oct - Dec 2014	664.10	0.00	383.02	400
Jan - Mar 2015	1,392.35	0.00	256.75	15
Apr - Jun 2015	233.45	0.00	198.76	0
Jul - Sep 2015	1,176.48	0.00	234.33	0
Oct - Dec 2015	2,823.89	0.00	184.76	0
Jan - Mar 2016	656.97	0.00	92.98	0
Apr - Jun 2016	27.96	0.00	78.48	0

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Jul - Sep 2016	0.00	0.00	0.00	0
Oct 2016	0.00	0.00	0.00	0
Cumulative	394,822.09	61,954.18	3,608.73	4,909
Contract 811B (Contract completed in September 2018)				
Sep 2010	0.00	0.00	0.00	0
Oct - Dec 2010	15,153.00	0.00	217.05	800
Jan - Mar 2011	42,584.00	0.00	175.20	0
Apr - Jun 2011	56,775.60	0.00	93.30	2,800
Jul - Sep 2011	32,989.20	0.00	101.00	2,600
Oct - Dec 2011	69,788.95	0.00	130.82	800
Jan - Mar 2012	8,650.05	183.21	126.33	1
Apr - Jun 2012	10,593.36	741.78	132.08	1,800
Jul - Sep 2012	8,690.46	0.00	158.18	1,000
Oct - Dec 2012	90,928.54	439.18	209.03	3,000
Jan - Mar 2013	132,750.10	3,230.17	175.07	1,600
Apr - Jun 2013	103,747.91	13,630.34	161.98	1,800
Jul - Sep 2013	117,969.66	42,223.51	204.59	2,200
Oct - Dec 2013	63,191.34	27,406.81	198.99	820
Jan - Mar 2014	64,352.76	14,117.06	262.67	0
Apr - Jun 2014	88,240.80	7,327.93	497.27	0
Jul - Sep 2014	25,156.05	12,424.34	706.97	0
Oct - Dec 2014	24,144.25	28,519.13	675.31	0
Jan - Mar 2015	45,131.23	83,382.98	565.20	24
Apr - Jun 2015	95,019.72	3,622.60	626.03	0
Jul - Sep 2015	52,894.68	115.80	521.37	0
Oct - Dec 2015	57,429.77	779.76	769.51	0
Jan - Mar 2016	22,039.64	345.27	1,109.71	0

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Apr - Jun 2016	8,950.00	598.88	2,273.09	0
Jul - Sep 2016	9,848.43	0.00	2,446.27	20
Oct - Dec 2016	3,723.00	0.00	4,462.75	1,200
Jan - Mar 2017	2,868.31	0.00	4,347.14	0
Apr - Jun 2017	1,156.70	0.00	3,261.42	0
Jul - Sep 2017	41,150.89	0.00	3,231.36	0
Oct - Dec 2017	1,710.81	0.00	2,335.78	0
Jan - Mar 2018	8,739.82	0.00	1,637.66	0
Apr - Jun 2018	4,041.59	0.00	761.14	0
Jul - Sep 2018	1,606.66	0.00	475.03	0
Cumulative	1,312,017.28	239,088.75	33,049.30	20,465
Contract 820 (Contract completed in August 2017)				
Jul - Sep 2010	14,393.40	0.00	65.40	0
Oct - Dec 2010	32,985.20	800.00	75.40	800
Jan - Mar 2011	20,259.10	0.00	75.70	0
Apr - Jun 2011	45,117.50	0.00	220.10	0
Jul - Sep 2011	52,712.00	0.00	99.50	0
Oct - Dec 2011	83,650.30	0.00	280.50	3,600
Jan - Mar 2012	73,865.20	0.00	340.91	8,600
Apr - Jun 2012	151,937.70	0.00	441.40	14,400
Jul - Sep 2012	229,891.80	0.00	512.20	4,600
Oct - Dec 2012	189,308.70	0.00	395.10	3,600
Jan - Mar 2013	33,406.50	0.00	442.50	3,400
Apr - Jun 2013	8,411.30	0.00	499.90	2,600
Jul - Sep 2013	248,201.01	0.00	591.89	4,000
Oct - Dec 2013	84,580.38	0.00	650.92	3,000
Jan - Mar 2014	26,316.36	0.00	561.21	6,200

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Apr - Jun 2014	171,544.46	0.00	807.01	0
Jul - Sep 2014	97,101.34	0.00	748.29	7,800
Oct - Dec 2014	4,253.67	0.00	675.07	1,200
Jan - Mar 2015	2,527.65	0.00	567.93	4,800
Apr - Jun 2015	2,280.31	0.00	552.87	0
Jul - Sep 2015	4,352.20	0.00	153.57	0
Oct - Dec 2015	2,301.58	0.00	78.28	800
Jan - Mar 2016	585.88	0.00	72.32	0
Apr - Jun 2016	136.95	0.00	30.70	0
Jul - Sep 2016	0.00	0.00	61.33	0
Oct - Dec 2016	0.00	0.00	87.46	0
Jan - Mar 2017	0.00	0.00	0.79	0
Apr - Jun 2017	0.00	0.00	0.00	0
Jul 2017	0.00	0.00	0.00	0
Aug 2017	0.00	0.00	0.00	0
Cumulative	1,580,120.49	800.00	9,088.25	69,400
Contract 821 (Contract completed in October 2016)				
Oct - Dec 2010	4,355.50	-	14.90	0
Jan - Mar 2011	24,625.60	-	13.90	0
Apr - Jun 2011	45,746.20	-	12.80	0
Jul - Sep 2011	114,135.80	-	11.30	4,460
Oct - Dec 2011	218,250.40	-	20.07	4,820
Jan - Mar 2012	259,843.10	-	24.05	1,590
Apr - Jun 2012	234,145.20	-	56.60	3,420
Jul - Sep 2012	228,306.70	-	85.40	4,570
Oct - Dec 2012	131,898.50	-	170.40	3,400
Jan - Mar 2013	82,639.90	-	267.90	2,310

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Apr - Jun 2013	7,511.70	-	625.00	2,530
Jul - Sep 2013	5,056.20	-	824.60	1,350
Oct - Dec 2013	6,623.30	-	641.30	450
Jan - Mar 2014	2,917.30	-	352.10	0
Apr - Jun 2014	556.38	-	196.17	0
Jul - Sep 2014	610.71	-	134.60	0
Oct - Dec 2014	96.55	-	24.13	0
Jan - Mar 2015	6.55	-	4.79	0
Apr - Jun 2015	0.00	-	0.00	0
Jul - Sep 2015	0.00	-	0.00	0
Oct - Dec 2015	0.00	-	0.00	0
Jan - Mar 2016	0.00	-	0.00	0
Apr - Jun 2016	0.00	-	0.00	0
Jul - Sep 2016	0.00	-	0.00	0
Oct 2016	0.00	-	0.00	0
Cumulative	1,367,325.59	-	3,480.01	28,900
Contract 822 (Contract completed in June 2018)				
May 2010	8,131.80	-	104.50	0
Jun 2010	9,981.40	-	29.60	0
Jul - Sep 2010	7,354.80	-	121.10	0
Oct - Dec 2010	11,232.30	-	634.89	0
Jan - Mar 2011	65,870.00	-	61.70	0
Apr - Jun 2011	121,189.60	-	72.30	400
Jul - Sep 2011	170,460.30	-	72.70	2,400
Oct - Dec 2011	159,032.55	-	70.68	2,200
Jan - Mar 2012	215,301.73	-	105.24	4,200
Apr - Jun 2012	340,339.23	-	80.22	7,445

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Jul - Sep 2012	560,170.60	-	94.38	13,350
Oct - Dec 2012	560,653.08	-	121.20	8,850
Jan - Mar 2013	379,827.89	-	179.90	9,432
Apr - Jun 2013	491,061.32	-	252.00	11,925
Jul - Sep 2013	487,877.52	-	357.20	10,400
Oct - Dec 2013	418,794.77	-	716.94	11,600
Jan - Mar 2014	213,808.42	-	752.13	7,600
Apr - Jun 2014	12,276.59	-	1,205.61	3,800
Jul - Sep 2014	5,527.37	-	1,211.19	3,000
Oct - Dec 2014	9,708.16	-	988.23	3,200
Jan - Mar 2015	28.71	-	613.47	4,000
Apr - Jun 2015	4,174.03	-	400.49	7,000
Jul - Sep 2015	7,527.47	-	374.10	0
Oct - Dec 2015	7,736.29	-	230.88	0
Jan - Mar 2016	5,463.25	-	292.60	7,100
Apr - Jun 2016	4,775.79	-	165.35	0
Jul - Sep 2016	1,646.80	-	110.76	0
Oct - Dec 2016	1,286.79	-	103.99	7,000
Jan - Mar 2017	666.63	-	49.06	0
Apr - Jun 2017	48.57	-	51.07	0
Jul - Sep 2017	15.35	-	24.75	0
Oct - Dec 2017	53.64	-	16.41	0
Jan - Mar 2018	20.43	-	87.87	0
Apr - Jun 2018	46.91	-	34.88	0
Cumulative	4,282,090.09	-	9,787.39	124,902
Contract 8217 (Contract completed in June 2018)				
Jan - Mar 2017	0.00	-	1.60	0

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Apr - Jun 2017	17.60	-	0.00	0
Jul - Sep 2017	0.00	-	0.00	0
Oct - Dec 2017	0.00	-	0.00	0
Jan - Mar 2018	537.90	-	4.90	0
Apr - Jun 2018	0.00	-	0.00	0
Cumulative	555.50	-	6.50	0
Contract 823A (Contract completed in January 2018)				
Jan - Mar 2011	2,842.90	-	133.60	0
Apr - Jun 2011	11,035.30	-	339.36	0
Jul - Sep 2011	24,695.70	-	49.90	0
Oct - Dec 2011	52,006.20	-	46.50	0
Jan - Mar 2012	74,468.02	-	60.00	0
Apr - Jun 2012	42,090.00	-	100.61	0
Jul - Sep 2012	141,584.20	-	148.90	0
Oct - Dec 2012	101,230.39	-	154.80	1,020
Jan - Mar 2013	64,957.74	-	185.72	0
Apr - Jun 2013	65,548.50	-	230.55	0
Jul - Sep 2013	47,698.26	-	159.49	0
Oct - Dec 2013	39,476.30	-	256.72	0
Jan - Mar 2014	9,977.77	-	99.11	0
Apr - Jun 2014	2,429.93	-	92.15	17
Jul - Sep 2014	1,170.50	-	202.13	26,600
Oct - Dec 2014	36,876.02	-	104.00	0
Jan - Mar 2015	101,012.52	-	112.01	11,261
Apr - Jun 2015	55,062.96	-	43.56	0
Jul - Sep 2015	39,339.89	-	166.78	0
Oct - Dec 2015	17,240.14	-	106.08	0

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Jan - Mar 2016	4,868.79	-	660.91	0
Apr - Jun 2016	4,558.94	-	419.44	7,200
Jul - Sep 2016	938.56	-	355.60	0
Oct - Dec 2016	5,629.34	-	101.32	200
Jan - Mar 2017	4,933.13	-	43.38	0
Apr - Jun 2017	3,893.86	-	87.02	0
Jul - Sep 2017	221.06	-	55.66	0
Oct - Dec 2017	398.84	-	35.79	0
Jan 2018	0.00	-	0.00	0
Cumulative	956,185.76	-	4,551.09	46,298
Contract 823B (Contract completed in January 2018)				
Jan - Mar 2011	33,447.20	-	547.90	0
Apr - Jun 2011	185,986.50	-	933.90	0
Jul - Sep 2011	182,420.60	-	306.60	1,201
Oct - Dec 2011	171,085.30	-	1,454.40	3,200
Jan - Mar 2012	217,732.90	-	346.70	2,600
Apr - Jun 2012	179,860.90	-	240.00	2,000
Jul - Sep 2012	413,941.20	-	697.20	0
Oct - Dec 2012	437,508.20	-	1,061.00	0
Jan - Mar 2013	561,345.16	-	1,479.88	0
Apr - Jun 2013	241,368.36	-	998.10	0
Jul - Sep 2013	134,503.96	-	885.27	1,200
Oct - Dec 2013	7,360.54	-	1,188.92	0
Jan - Mar 2014	91.02	-	692.24	0
Apr - Jun 2014	38.20	-	769.33	0
Jul - Sep 2014	192.59	-	664.84	0
Oct - Dec 2014	10,077.14	-	492.57	0

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Jan - Mar 2015	15,072.40	-	373.00	0
Apr - Jun 2015	5,224.83	-	379.63	0
Jul - Sep 2015	8,081.95	-	348.94	0
Oct - Dec 2015	3,021.77	-	623.31	0
Jan - Mar 2016	1,449.64	-	170.42	0
Apr - Jun 2016	3,212.85	-	235.31	0
Jul - Sep 2016	4,120.08	-	163.05	0
Oct - Dec 2016	706.87	-	189.98	0
Jan - Mar 2017	931.48	-	140.87	0
Apr - Jun 2017	39.50	-	63.18	0
Jul - Sep 2017	39.41	-	33.04	0
Oct - Dec 2017	0.00	-	260.19	0
Jan 2018	0.00	-	0.00	0
Cumulative	2,818,860.55	-	15,739.77	10,201
Contract 824 (Contract completed in June 2018)				
Oct - Dec 2010	19,450.00	-	4,450.00	0
Jan - Mar 2011	10,854.00	-	1,431.50	0
Apr - Jun 2011	8,442.00	-	1,274.00	0
Jul - Sep 2011	17,198.00	-	236.00	0
Oct - Dec 2011	19,175.00	-	342.00	0
Jan - Mar 2012	35,770.00	-	637.00	0
Apr - Jun 2012	41,139.00	-	97.00	0
Jul - Sep 2012	57,294.00	-	219.00	0
Oct - Dec 2012	133,146.10	-	82.00	0
Jan - Mar 2013	130,597.80	-	46.80	0
Apr - Jun 2013	183,916.60	-	108.90	0
Jul - Sep 2013	159,908.90	-	141.50	0

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Oct - Dec 2013	204,504.80	-	118.40	0
Jan - Mar 2014	181,783.00	-	98.60	0
Apr - Jun 2014	176,150.80	-	109.20	0
Jul - Sep 2014	159,554.30	-	103.00	1,400
Oct - Dec 2014	185,546.80	-	91.60	0
Jan - Mar 2015	188,994.36	-	110.60	0
Apr - Jun 2015	115,261.80	-	119.40	0
Jul - Sep 2015	41,998.77	-	151.80	0
Oct - Dec 2015	47,501.78	-	241.08	0
Jan - Mar 2016	16,598.84	-	223.05	1,800
Apr - Jun 2016	3,620.80	-	1,280.60	0
Jul - Sep 2016	1,097.70	-	499.00	0
Oct - Dec 2016	2,361.50	-	359.90	0
Jan - Mar 2017	3,594.20	-	416.00	0
Apr - Jun 2017	471.40	-	453.20	0
Jul - Sep 2017	62.30	-	450.40	0
Oct - Dec 2017	74.90	-	126.20	0
Jan - Mar 2018	954.90	-	96.20	0
Apr - Jun 2018	9.40	-	0.00	0
Cumulative	2,147,033.75	-	14,113.93	3,200
Contract 825 (Contract completed in January 2018)				
Apr - Jun 2010	11,116.10	-	206.90	0
Jul - Sep 2010	29,059.50	-	59.30	0
Oct - Dec 2010	55,649.60	-	623.30	0
Jan - Mar 2011	30,912.70	-	20.70	0
Apr - Jun 2011	53,130.30	-	36.80	0
Jul - Sep 2011	5,837.70	-	74.10	2,200

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Oct - Dec 2011	13,664.90	-	118.10	0
Jan - Mar 2012	30,449.50	-	87.10	0
Apr - Jun 2012	27,588.00	-	117.80	400
Jul - Sep 2012	34,579.30	-	266.10	0
Oct - Dec 2012	75,729.00	-	198.19	0
Jan - Mar 2013	122,107.00	-	190.97	200
Apr - Jun 2013	56,775.00	-	187.97	0
Jul - Sep 2013	13,909.00	-	257.70	400
Oct - Dec 2013	63,163.00	-	357.70	8,400
Jan - Mar 2014	106,745.00	-	170.10	600
Apr - Jun 2014	101,165.00	-	347.40	0
Jul - Sep 2014	74,377.00	-	702.90	0
Oct - Dec 2014	19,483.00	-	417.60	0
Jan - Mar 2015	5,248.00	-	210.50	0
Apr - Jun 2015	2,958.00	-	376.29	0
Jul - Sep 2015	4,367.00	-	460.00	0
Oct - Dec 2015	1,139.00	-	71.00	0
Jan - Mar 2016	1,201.00	-	40.00	0
Apr - Jun 2016	1,237.00	-	62.00	0
Jul - Sep 2016	54.00	-	81.00	0
Oct - Dec 2016	0.00	-	90.00	0
Jan - Mar 2017	16.00	-	186.00	0
Apr - Jun 2017	0.00	-	34.00	0
Jul - Sep 2017	0.00	-	34.00	0
Oct - Dec 2017	10.00	-	38.00	0
Jan 2018	0.00	-	0.00	0
Cumulative	941,670.60	-	6,123.52	12,200

Amount of Construction Waste Disposed				
Reporting Period	**Inert C&D [1] Materials to Public Fill (tonnes)**	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**
Contract 826 (Contract completed in November 2017)				
Apr - Jun 2014	12,016.90	-	18.50	0
Jul - Sep 2014	16,279.50	-	0.00	0
Oct - Dec 2014	106.90	-	0.00	0
Jan - Mar 2015	0.00	-	0.00	0
Apr - Jun 2015	0.00	-	0.00	0
Jul - Sep 2015	362.79	-	11.22	0
Oct - Dec 2015	28.11	-	13.03	0
Jan - Mar 2016	51.85	-	37.56	0
Apr - Jun 2016	67.44	-	70.40	0
Jul - Sep 2016	0.00	-	0.00	0
Oct - Dec 2016	0.00	-	0.00	0
Jan - Mar 2017	0.00	-	0.00	0
Apr - Jun 2017	0.00	-	0.00	0
Jul - Sep 2017	0.00	-	0.00	0
Oct 2017	0.00	-	0.00	0
Nov 2017	0.00	-	0.00	0
Cumulative	28,913.49	-	150.71	0

Notes:

1. Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil.
2. Non-inert C&D materials include steel, paper / cardboard packaging waste, plastics and other wastes such as general refuse.

The total amounts are summarized as follows.

Inert C&D [1] Materials to Public Fill (tonnes)	**Marine Sediment Materials (tonnes)**	**Non-inert C&D [2] Materials to Landfill (tonnes)**	**Chemical Waste to designated treatment facility (Litre)**	**Chemical Waste to designated treatment facility (Kg)**
22,347,355.18	1,765,151.24	170,607.54	391,249.50	19,792.00

3.9 Water Quality

Monitoring of the implementation of the water quality mitigation measures during construction phase was conducted in accordance with the requirements as stipulated in the EM&A Manual.

Weekly site inspection was conducted throughout the construction stage covering the entire project site areas to ensure the recommended mitigation measures are properly implemented.

In the reporting period, the water quality mitigation measures were implemented in accordance with the requirements as stipulated in the EM&A Manual and found in an acceptable manner.

4 RECORD OF ENVIRONMENTAL COMPLAINTS

4.1 Complaints

In the reporting period, environmental complaints were referred from EPD occasionally. There were a total of 268 environmental complaints since commencement of the construction for the XRL Project. 80 of them were classified as valid complaints after investigations.

The complaints have been handled in accordance to the requirements in the EM&A Manual. The ET had provided feasible solutions to the ER and Contractors in mitigating the environmental disturbances/concerns lodged by the complainants. All complaint cases had been resolved and closed. Details of the environmental complaints including investigations and follow-up actions can be referenced in the respective Monthly EM&A Reports.

A summary of environmental complaints since the commencement of the Project is shown in the below Table 4-1.

Table 4-1 Records of Environmental Complaints

Reporting Period	Frequency	Cumulative	Nature	Status
Jun 2010	1	1	1 no. - Water	Cases closed
Jul - Sep 2010	3	4	1 no. - Air 2 nos. - Noise	Cases closed
Oct - Dec 2010	9	13	1 no. - Air 5 nos. - Noise 1 no. - Water 1 no. - Air/Noise 1 no. - Others (soil contamination)	Cases closed
Jan - Mar 2011	11	24	3 nos.- Air 2 nos. - Noise 3 nos. - Water 2 nos. - Others (mud deposit on road)	Cases closed

Reporting Period	Frequency	Cumulative	Nature	Status
Apr - Jun 2011	7	31	1 no. - Air 4 nos. - Noise 1 no. - Water 1 no. - Others (concrete and mud stain)	Cases closed
Jul - Sep 2011	4	35	1 no.- Air 3 nos. - Noise	Cases closed
Oct - Dec 2011	24	59	5 nos.- Air 15 nos. - Noise 2 nos. - Air/Water 1 no. - Noise/Water 1 no. - Others (fencing location)	Cases closed
Jan - Mar 2012	14	73	10 nos.- Noise 1 no. - Water 3 no. – Air/Noise	Cases closed
Apr - Jun 2012	18	91	4 nos.- Air 8 nos. - Noise 6 nos. - Air/Noise	Cases closed
Jul - Sep 2012	17	108	1 no.- Air 11 nos. - Noise 5 nos. - Water	Cases closed
Oct - Dec 2012	19	127	4 nos.- Air 10 nos. - Noise 4 nos. - Water 1 no. - Others (noise/vibration)	Cases closed
Jan - Mar 2013	19	146	10 nos.- Air 5 nos. - Noise 2 nos. - Water 1 no. - Air/Noise 1 no. - Air/Water	Cases closed
Apr - Jun 2013	9	155	1 no.- Air 5 nos. - Noise 2 nos. - Water 1 no. - Air/Noise	Cases closed

Reporting Period	Frequency	Cumulative	Nature	Status
Jul - Sep 2013	11	166	2 no.- Air 5 nos. - Noise 2 nos. - Water 2 no. - Air/Noise	Cases closed
Oct - Dec 2013	5	171	2 no.- Air 1 no. - Noise 1 no. - Water 1 no. - Others (ecology/suspected illegal pond filling by using XRL excavated spoil)	Cases closed
Jan - Mar 2014	6	177	3 nos.- Noise 3 nos. - Water	Cases closed
Apr - Jun 2014	6	183	3 nos.- Noise 1 no. - Water 1 no. - Air/Noise 1 no. - Others (suspected illegal dumping of wasted bricks)	Cases closed
Jul - Sep 2014	6	189	1 no.- Air 3 nos. - Noise 1 no. - Water 1 no. - Others (malpractice of mixing spoil with black mud)	Cases closed
Oct - Dec 2014	9	198	3 no.- Air 5 nos. - Noise 1 no. - Others (light from tower crane)	Cases closed
Jan - Mar 2015	2	200	1 no.- Air 1 no. - Noise	Cases closed
Apr - Jun 2015	11	211	4 nos.- Air 7 nos. - Noise	Cases closed
Jul - Sep 2015	6	217	5 nos.- Noise 1 no. - Others (mud spillage to pond)	Cases closed

Reporting Period	Frequency	Cumulative	Nature	Status
Oct - Dec 2015	6	223	1 no.- Air 5 nos. - Noise	Cases closed
Jan - Mar 2016	3	226	2 nos.- Noise 1 no. - Others (light from tower crane)	Cases closed
Apr - Jun 2016	5	231	1 no.- Noise 4 nos. - Water	Cases closed
Jul - Sep 2016	3	234	1 no.- Noise 2 nos. - Water	Cases closed
Oct - Dec 2016	8	242	1 no.- Air 6 nos. - Noise 1 no. - Water	Cases closed
Jan - Mar 2017	5	247	2 no.- Air 3 nos. - Noise	Cases closed
Apr - Jun 2017	2	249	1 no.- Air 1 no. - Water	Cases closed
Jul - Sep 2017	4	253	1 nos.- Noise 1 no. - Water 2 no. - Air/Noise	Cases closed
Oct - Dec 2017	5	258	5 nos.- Noise	Cases closed
Jan - Mar 2018	5	263	2 nos.- Air 2 nos. - Noise 1 no. - Water	Cases closed
Apr - Jun 2018	5	268	1 no.- Air 2 nos. - Noise 2 no. - Water	Cases closed
Jul - Sep 2018	-	-	-	--

5 NON-COMPLIANCE AND DEFICIENCY

5.1 Record of Site Inspections

Regular site inspections led by the Engineer's Representative and anticipated by ET and respective Contractors were undertaken in accordance with the EM&A Manual in the reporting period. The Contractors' performance on environmental matters were assessed and found in an acceptable manner. The inspection findings and the associated recommendations on improvement to the environmental protection and pollution control works were raised to the contractors for reference and/or action. Even though some of the actions by the respective contractors have not been implemented within the agreeable time, it could be concluded that the environmental protection and pollution control works had been implemented satisfactorily.

5.2 Record of Complaints

Details of the complaints have been summarized in Section 4.

5.3 Summary of Exceedance

Details of the exceedances have been summarized in Section 3.

5.4 Summary of Non-compliance and Corrective Actions

There were two non-compliances identified in the reporting period for XRL Project. They are:

(1) Substandard effluent at discharge point during regular site inspection of Contract 825 in July 2014 due to insufficient retention time for treatment. The Contractor has immediately suspended the discharge. Remedial action by allowing sufficient retention time manually was undertaken and the deficiency was rectified on the same day. The Contractor was urged to keep close monitoring of the wastewater treatment facilities and promptly response to any irregularities to ensure compliance with the requirements specified in the effluent discharge license.

(2) Discharging of untreated wastewater from shaft to the u-channel which leading to outside of site boundaries was identified during regular site inspection of Contract 811A in August 2014. The Contractor has immediately suspended the discharge. Remedial action by diverting the untreated wastewater to the wastewater treatment plant was undertaken and the deficiency was rectified. The Contractor

was urged to keep close monitoring of the wastewater collection and treatment facilities and to ensure compliance with the environmental legislations as well as the EIA report and EM&A Manual.

5.5 Summary of Summons and Prosecutions

There was 30 nos. of environmental prosecution received in the reporting period from March 2010 to September 2018 and 9 out of them have been successful prosecuted.

A summary of successful prosecutions since the commencement of the Project is shown in the Table 5-1 below.

Table 5.1 Records of Summons and Prosecutions

Contract	Regulation	Received Date	Nature of incident	Status
XRL	CAP. 499 Environmental Impact Assessment Ordinance	8 Jun 2011	Carrying out of a designated project in an area zoned as "Conservation Area" without an environmental permit for the project	MTR was admitted guilty and settled a fines of HK$15,000.
810B	CAP. 400 Noise Control Ordinance	3 Mar 2012	Use of unauthorized PME during the restricted hours on 9 Sep 2011	Fines of HK$8,000 and HK$12,000 were admitted on two contractors in JV respectively.
811B	CAP. 400 Noise Control Ordinance	9 Jun 2012	Use of unauthorized PME during the restricted hours on 13 Dec 2011	Fines of HK$100,000 and HK$50,000 were admitted on two contractors in JV respectively.
821	CAP. 400 Noise Control Ordinance	1 Aug 2012	Use of unauthorized PME during the restricted hours on 12 Feb 2012	A fines of HK$100,000 was admitted on the contractors in JV.
824	CAP. 358 Water Pollution Control Ordinance	11 Mar 2013	Discharge of suspended solids exceeded the upper allowable limits, i.e. 10mg/L on 18 Sep 2012	Contractor was admitted guilty and settled a fines of HK$15,000
811A	CAP. 400 Noise Control Ordinance	3 Nov 2012	Unauthorized PCW in restricted hours on 20 May 2012	Contractor was announced a fines of HK$20,000

Contract	Regulation	Received Date	Nature of incident	Status
825	CAP. 400 Noise Control Ordinance	6 Sep 2014	Use of PME not included in CNP (forklift) on 11 Apr 2014	Contractor was announced a fines of HK$15,000
824	CAP. 358 Water Pollution Control Ordinance	19 Mar 2015	Effluent quality unlikely to meet the licence allowable limits on 27 Sep 2014	Contractor was admitted guilty and settled a fines of HK$30,000
826	CAP. 358 Water Pollution Control Ordinance	1 Feb 2016	Discharging not unpolluted water into communal drain on 6 - 7 Aug 2015	Contractor was announced a fines of HK$20,000

6 STATUS OF STATUTORY SUBMISSION

6.1 Submission required under Environmental Permits

A summary of the status of submissions required under the XRL Environmental Permit and its subsequent version as of September 2018 is shown Table 6-1.

Table 6-1 Summary of Submissions in accordance with EP conditions

EP-349/2009 Clause No.	Document Title	Status
2.1	Establishment of ET	Established
2.3	Employment of IEC	Established
2.21	Revised Contamination Assessment Plan (CAP) for West Kowloon, Kwai Chung Ventilation Building, Mai Lai Road Works Area, Nam Cheong Barging Point	Submitted on 29 Dec 2009
2.14	Tree Planting and Landscape Plan - For Shum Shui Po District TLP-2 (Revision 1)	Submitted on 6 Jan 2010
2.42	Baseline Monitoring Report (Part 2) for Works Area R	Submitted on 8 Jan 2010
2.21	Revised Contamination Assessment Plan (CAP) for West Kowloon Terminus Works Area (Revision B)	Submitted on 19 Jan 2010
2.42	Baseline Monitoring Report (Part 4) for Works Area V1	Submitted on 25 Jan 2010
1.13	Notification of the commencement date of construction of the Project for Contract 802, 805, 803A, 803B, 803C, 803D	Submitted on 1 Feb 2010
2.9	Construction Programme	Submitted on 1 Feb 2010
2.6	Management organization of the Civil Contractors for Contract 802, 805, 803A, 803C, 803D	Submitted on 2 Feb 2010
2.14	Tree Planting and Landscape Plan - For Yuen Long District (Mai Po) TLP-6 (Revision1)	Submitted on 2 Feb 2010
2.42	Baseline Monitoring Report (Part 3) Rev 1 for Works Area V1	Submitted on 3 Feb 2010
2.42	Baseline Monitoring Report (Part 6) for Works Area A	Submitted on 12 Feb 2010

EP-349/2009 Clause No.	Document Title	Status
2.6	Management organization of the Civil Contractors for Contract 810B	Submitted on 15 Feb 2011
1.13	Notification of the commencement date of construction of the Project for Contract 825	Submitted on 26 Feb 2010
2.6	Management organization of the Civil Contractors for Contract 825	Submitted on 26 Feb 2010
2.42	Baseline Monitoring Report (Part 5) Rev 1 for Works Area V2	Submitted on 17 Feb 2010
2.12 (ii)	Monitoring and Emergency Response Plan in relation to potential impacts on fishponds in Mai Po Area due to noise or vibration	Submitted on 25 Feb 2010
2.10	Ecological Monitoring Plan	Submitted on 26 Feb 2010
2.12	Monitoring and Emergency Response Plan (MERP)	Submitted on 26 Feb 2010
2.8	Set up of designated complaint hotline	Submitted on 2 Mar 2010
2.47	Baseline Monitoring Report (Part 7) for Works Area G	Submitted on 4 Mar 2010
2.15	Tree Protection Plan	Submitted on 4 Mar 2010
2.21	Revised Contamination Assessment Plan (CAP) (Part I) for Mai Po Ventilation Building Works Area (Revision D)	Submitted on 10 Mar 2010
2.21	Revised Contamination Assessment Plan (CAP), Contamination Assessment Report (CAR) and Remediation Assessment Plan (RAP) for Mai Po Works Area	Submitted on 11 Mar 2010
2.14	Tree Planting and Landscape Plan - For Tuen Mun District TLP-5	Submitted on 12 Mar 2010
2.14	Tree Planting and Landscape Plan - For Tsuen Wan District TLP-4	Submitted on 12 Mar 2010
2.7	Set up of community Liaison Groups	Submitted on 15 Mar 2010
2.14	Tree Planting and Landscape Plan - For Yau Tsim Mong District TLP-1 (Revision 1)	Submitted on 16 Mar 2010
2.21	Revised Contamination Assessment Plan for Lai Chi Kok Works Area (Site K) (Revision C)	Submitted on 18 Mar 2010

EP-349/2009 Clause No.	Document Title	Status
2.21	Revised Contamination Assessment Plan (CAP) and Contamination Assessment Report (CAR) for Lai Chi Kok Works Area	Submitted on 18 Mar 2010
2.6	Management organization of the Civil Contractors for Contract 803B	Submitted on 23 Mar 2010
2.19	Updated C&D Material Management Plan	Submitted on 23 Mar 2010
2.42	Baseline Monitoring Report (Part 8) for Works Area H	Submitted on 25 Mar 2010
1.13	Notification of the commencement date of construction of the Project for Contract 822	Submitted on 29 Mar 2010
2.6	Management organization of the Civil Contractors for Contract 822	Submitted on 29 Mar 2010
2.42	Baseline Monitoring Report (Part 3) (Revision 2) for Works Area V1	Submitted on 7 Apr 2010
2.14	Tree Planting and Landscape Plan - For Kwai Tsing TLP-3	Submitted on 14 Apr 2010
2.42	Baseline Monitoring Report (Part 3) Rev 2 for Works Area V1	Submitted on 15 Apr 2010
2.42	Baseline Monitoring Report (Part 6) Rev 1 for Works Area A	Submitted on 15 Apr 2010
2.43	Monthly EM&A Report for March 2010	Submitted on 19 Apr 2010
2.10	Hydrogeological Impact Assessment Report	Submitted on 22 Apr 2010
2.47	Baseline Monitoring Report (Part 1) Rev 3 for Works Area N, O, P, Q and Y	Submitted on 27 Apr 2010
2.43	Monthly EM&A Report for April 2010	Submitted on 11 May 2010
2.42	Baseline Monitoring Report (Part 9) Rev 1 for Works Area V2	Submitted on 20 May 2010
2.43	Monthly EM&A Report for May 2010	Submitted on 11 Jun 2010
2.43	Monthly EM&A Report for March 2010 (Rev 1)	Submitted on 15 Jun 2010
2.43	Monthly EM&A Report for April 2010 (Rev 1)	Submitted on 15 Jun 2010
2.21	Revised Contamination Assessment Plans for Mei Lai Road Works Area (Revision B)	Submitted on 2 Jul 2010
2.14	Tree Planting and Landscape Plan - For Tai	Submitted on 11 Jul 2010

EP-349/2009 Clause No.	Document Title	Status
	Shu ha Road West TLP-10	
2.42	Baseline Monitoring Report (Part 10) for Works Area J and L	Submitted on 13 Jul 2010
2.43	Monthly EM&A Report for June 2010	Submitted on 14 Jul 2010
2.37	Archaeological Action Plan	Submitted on 18 Jul 2010
2.42	Baseline Monitoring Report (Part 1) Rev 4 for Works Area N, O, P, Q and Y	Submitted on 27 Jul 2010
2.43	Monthly EM&A Report for July 2010	Submitted on 11 Aug 2010
2.11 (iii)	Vegetation Survey Report for Tai Shu Ha Road West (Rev 1)	Submitted on 16 Aug 2010
2.42	Baseline Monitoring Report (Part 2) (Rev 1) for Works Areas S and T	Submitted on 20 Aug 2010
2.47	Baseline Monitoring Report (Part 11) for Works Area M	Submitted on 21 Aug 2010
2.43	Monthly EM&A Report for August 2010	Submitted on 13 Sep 2010
2.6	Management organization of the Civil Contractors for Contract 821	Submitted on 18 Sep 2010
1.13	Notification of the commencement date of construction of the Project for Contract 821	Submitted on 20 Sep 2010
2.6	Management organization of the Civil Contractors for Contract 824	Submitted on 15 Oct 2010
2.6	Management organization of the Civil Contractors for Contract 820	Submitted on 10 Nov 2010
2.6	Management organization of the Civil Contractors for Contract 823A and 823B	Submitted on 17 Dec 2010
2.42	Baseline Monitoring Report (Part 13 and Part 14)	Submitted on 12 Dec 2010
2.21	Revised Contamination Assessment Plan for Shek Kong Works Area for Area I and L	Submitted on 20 Dec 2010

EP-349/2009/A Clause No.	Document Title	Status
2.21	Contamination Assessment Report (CAR) for Lai Chi Kok Works Area (Rev B)	Submitted on 18 Sep 2010
2.21	Supplementary Contamination Assessment	Submitted on 18 Sep 2010

EP-349/2009/A Clause No.	Document Title	Status
	Report for Nam Cheong Barging Point	
2.21	Supplementary Contamination Assessment Report for Kwai Chung Ventilation Building Works Area	Submitted on 18 Sep 2010
2.14	Tree Planting and Landscape Plan TLP-9: Works in Yuen Long District (Yick Yuen)	Submitted on 12 Oct 2010
2.43	Monthly EM&A Report for September 2010	Submitted on 14 Oct 2010
1.13	Notification of the commencement date of construction of the Project for Contract 824	Submitted on 15 Oct 2010
2.11	Groundwater Level Drawdown Contingency Plan for Contract 825	Submitted on 15 Oct 2010
2.14	Tree Planting and Landscape Plan (Part 10) (Works in Yuen Long District – Tai Shui Ha) (Revision 1 – Addendum Pages)	Submitted on 20 Oct 2010
2.14	Tree Planting and Landscape Plan (Part 7) (Works in Yuen Long District – Remainder) (Revision 1)	Submitted on 20 Oct 2010
2.14	Tree Planting and Landscape Plan (Part 9) (Works in Yuen Long District – Yick Yuen)	Submitted on 20 Oct 2010
2.42	Baseline Monitoring Report (Part 12) for Works Areas B, C and F	Submitted on 22 Oct 2010
2.21	Contamination Assessment Report and Remediation Assessment Report for Mai Po Works Area (Part 1, Rev B)	Submitted on 21 Oct 2010
2.14	Tree Planting and Landscape Plan TLP-10: Works in Yuen Long District (Tai Shu Ha) (Revision 1 - Addendum Pages)	Submitted on 28 Oct 2010
1.13	Notification of the commencement date of construction of the Project for Contract 820	Submitted on 10 Nov 2010
2.43	Monthly EM&A Report for October 2010	Submitted on 12 Nov 2010
2.11	Contingency Plan for Groundwater Level (Contract 822 - Tse Uk Tsuen to Shek Yam Tunnels)	Submitted on 12 Nov 2010
2.21	Revised Contamination Assessment Plan for Mai Po Works Area for Area C1 and D	Submitted on 13 Nov 2010
2.21	Supplementary Contamination Assessment Report for Mei Lai Road Works Area	Submitted on 15 Nov 2010

EP-349/2009/A Clause No.	Document Title	Status
2.21	Contamination Assessment Report and Remediation Assessment Report for Mai Po Works Area (Rev C)	Submitted on 15 Nov 2010
1.13	Notification of the commencement date of construction of the Project for Contract 823A and 823B	Submitted on 17 Dec 2010
2.46	Monthly EM&A Report for November 2010	Submitted on 14 Dec 2010
2.46	Monthly EM&A Report for December 2010	Submitted on 14 Jan 2011
2.11	Contingency Plan for Groundwater Level for Contract 825 (Rev 1)	Submitted on 15 Jan 2011
2.11	Contingency Plan for Groundwater Level for Contract 811B	Submitted on 20 Jan 2011
2.14	Tree Planting and Landscape Plan (Part 7) (Revision 1 – Addendum) (Works in Yuen Long District – Remaining) (Revision 1)	Submitted on 20 Jan 2011
2.21	Revised Contamination Assessment Plan for Shek Kong Works Area for Area F, G, U and V	Submitted on 21 Jan 2011
2.21	Revised Contamination Assessment Plan for Mai Po Ventilation Building Works Area for Area C1 and D (Rev B)	Submitted on 22 Jan 2011
2.21	Supplementary Contamination Assessment Report and Remediation Action Plan for Kwai Chung Ventilation Building (Rev B)	Submitted on 22 Jan 2011
2.42	Baseline Monitoring Report (Part 13) Rev 1	Submitted on 23 Jan 2011

EP-349/2009/B Clause No.	Document Title	Status
2.42	Baseline Monitoring Report (Part14)	Submitted on 24 Dec 2010
2.21	Revised Contamination Assessment Plan for Shek Kong Works Areas	Submitted on 11 Feb 2011
2.42	Landscape Plan for To Kau Wan Works Area	Submitted on 14 Feb 2011
1.13	Notification of the commencement date of construction of the Project for Contract 810B	Submitted on 15 Feb 2011
2.43	Monthly EM&A Report for January 2011	Submitted on 16 Feb 2011

EP-349/2009/B Clause No.	Document Title	Status
2.21	Revised Contamination Assessment Plan for Shek Kong Works Area for Area M, N, O, P, Q and R	Submitted on 16 Feb 2011
2.11	Contingency Plan for Groundwater Level Drawdown for Contract 820	Submitted on 12 Mar 2011
2.11	Contingency Plan for Groundwater Level Drawdown for Contract 825 (Rev 2)	Submitted on 12 Mar 2011
2.46	Monthly EM&A Report for February 2011	Submitted on 14 Mar 2011
2.21	Revised Contamination Assessment Plan for Shek Kong Works Area (Site B&W)	Submitted on 17 Mar 2011
2.21	Revised Contamination Assessment Plan for Shek Kong Works Area (SSS)	Submitted on 17 Mar 2011
2.11	Groundwater Monitoring and Contingency Plan for North Section of Approach Tunnel (Contract 811A)	Submitted on 23 Mar 2011
2.11	Contingency Plan for Groundwater Drawdown for Shek Yam to Mei Lai Road Tunnels (Contract 821)	Submitted on 28 Mar 2011
2.21	Supplementary Contamination Assessment Report and Remediation Action Plan for Kwai Chung Ventilation Building Works Area (Site H) (Rev C) – Addendum Page	Submitted on 13 Apr 2011
2.21	Supplementary Contamination Assessment Report and Remediation Action Plan for Kwai Chung Ventilation Building Works Area (Rev C)	Submitted on 13 Apr 2011
2.46	Monthly EM&A Report for March 2011	Submitted on 15 Apr 2011
2.11	Groundwater Monitoring and Contingency Plan for North Section of Approach Tunnel (Contract 811B) (Rev B)	Submitted on 18 Apr 2011
2.47	Baseline Monitoring Report (Part 13) Rev 2	Submitted on 20 Apr 2011
2.21	Revised Contamination Assessment Plans for Shek Kong Stabling Sidings Works Areas I, II and III	Submitted on 11 May 2011
2.11	Contingency Plan for Groundwater Level (Contract 822 - Tse Uk Tsuen to Shek Yam Tunnels) (Rev B)	Submitted on 12 May 2011

EP-349/2009/B Clause No.	Document Title	Status
2.12 (i)	Ecological Habitat Management Plan (Version 2)	Submitted on 16 May 2011
2.46	Monthly EM&A Report for April 2011	Submitted on 17 May 2011
2.24	Performance Test Plan	Submitted on 20 May 2011
2.12 (i)	Ecological Habitat Management Plan (Version 2) – Addendum Page	Submitted on 12 Jun 2011
2.46	Monthly EM&A Report for May 2011	Submitted on 15 Jun 2011
2.42	Baseline Ground-borne Noise Monitoring Report	Submitted on 21 Jun 2011
2.21	Revised Contamination Assessment Plans for Shek Kong Stabling Sidings (SSS) Works Area I (Revision C)	Submitted on 27 Jun 2011
2.11	Contingency Plan for Groundwater Drawdown for Mei Lai Road to Hoi Ting Road Tunnels Contract 820 (Revision 1)	Submitted on 27 Jun 2011
2.46	Monthly EM&A Report for June 2011	Submitted on 15 Jul 2011
2.11	Groundwater Monitoring and Contingency Plan for South Section of Approach Tunnel (Contract 811B) (Revision C)	Submitted on 11 Jul 2011
2.11	Contingency Plan for Groundwater Drawdown for Contract 810B	Submitted on 13 Jul 2011
2.21	Revised Contamination Assessment Plans for Mai Po Ventilation Building Works Area (Site C1 and D) (Rev C)	Submitted on 13 Jul 2011
2.38	Further Archaeological Investigation Report - Shek Kong Stabling Sidings	Submitted on 21 Jul 2011
2.46	Monthly EM&A Report for July 2011	Submitted on 11 Aug 2011
2.24	Performance Test Plan (Revision B)	Submitted on 15 Aug 2011
2.21	Revised Contamination Assessment Plan for Shek Kong Stabling Sidings (SSS) Works Areas I & II – Amended Pages	Submitted on 17 Aug 2011
2.12(i)	Final Report for Ecological Habitat Management Plan (EHMP) (Version 2) – Addendum Page (Part 2)	Submitted on 18 Aug 2011
2.11	Contingency Plan for Groundwater	Submitted on 29 Aug 2011

EP-349/2009/B Clause No.	Document Title	Status
	Drawdown for Contract 810B (Revision A)	
2.42	Baseline Ground-borne Noise Monitoring Report – Addendum Pages	Submitted on 22 Aug 2011
2.21	Supplementary Contamination Assessment Report for Shek Kong Stabling Sidings (SSS) Works Area III	Submitted on 31 Aug 2011
2.46	Monthly EM&A Report for August 2011	Submitted on 15 Sep 2011
2.21	Supplementary Contamination Assessment Report and Remedial Action Plan for Shek Kong Stabling Sidings (SSS) Works Area I	Submitted on 21 Sep 2011
2.21	Supplementary Contamination Assessment Report for Shek Kong Stabling Sidings (SSS) Works Areas II & III	Submitted on 21 Sep 2011
2.21	Remediation Report for Kwai Chung Ventilation Building Works Area (Site H)	Submitted on 21 Sep 2011
2.46	Monthly EM&A Report for September 2011	Submitted on 17 Oct 2011

EP-349/2009/C Clause No.	Document Title	Status
2.23	Performance Test Plan (Revision C)	Submitted on 21 Oct 2011
2.23 (Section 4.15 of the EM&A Manual)	Construction Ground-borne Noise Monitoring Plan	Submitted on 7 Nov 2011
2.11	Contingency Plan for Groundwater Drawdown of Contract 824	Submitted on 9 Nov 2011
2.21	Supplementary Contamination Assessment Report and Remediation Action Plan for Shek Kong Stabling Sidings (SSS) Works Area I (Revision B)	Submitted on 12 Nov 2011
2.21	Supplementary Contamination Assessment Report for Shek Kong Stabling Sidings (SSS) Works Area II (Revision B)	Submitted on 12 Nov 2011
2.46	Monthly EM&A Report for October 2011	Submitted on 14 Nov 2011
2.11	Contingency Plan for Groundwater Drawdown for Contract 823A	Submitted on 6 Dec 2011

EP-349/2009/C Clause No.	Document Title	Status
2.46	Monthly EM&A Report for November 2011	Submitted on 14 Dec 2011
2.11	Contingency Plan for Groundwater Drawdown for Contract 823B	Submitted on 18 Jan 2012
2.11	Contingency Plan for Groundwater Drawdown for Contract 810A	Submitted on 12 Feb 2012
2.21	Supplementary Contamination Assessment Report for Shek Kong Stabling Siding Works Area II (Rev C)	Submitted on 21 Feb 2012
2.21	Supplementary Contamination Assessment Report and Remediation Action Plan for Shek Kong Stabling Siding (SSS) Works Area I (Rev C)	Submitted on 7 Mar 2012
2.11	Contingency Plan for Groundwater Drawdown for Contract 823A (Rev A)	Submitted on 12 Mar 2012
2.11	Groundwater Drawdown Contingency Plan for Ngau Tam Mei to Tai Kong Po Tunnels for Contract 824 (Rev A)	Submitted on 16 Mar 2012
2.11	Groundwater Drawdown Contingency Plan for Shek Kong Stabling Sidings and Emergency Rescue Siding for Contract 823B (Rev 1) - Addendum Pages	Submitted on 19 Mar 2012
2.2	Construction Ground-borne Noise Monitoring Plan	Submitted on 30 Mar 2012

EP-349/2009/D Clause No.	Document Title	Status
2.46	Monthly EM&A Report for December 2011	Submitted on 16 Jan 2012

EP-349/2009/E Clause No.	Document Title	Status
2.46	Monthly EM&A Report for January 2012	Submitted on 14 Feb 2012
2.21	Supplementary Contamination Assessment Report for Shek Kong Stabling Siding Works Area II (Rev D)	Submitted on 24 Feb 2012
2.21	Supplementary Contamination Assessment Report and Remediation Action Plan for Shek Kong Stabling Sidings (SSS) Works	Submitted on 7 Mar 2012

EP-349/2009/E Clause No.	Document Title	Status
	Area I (Revision C)	
2.46	Monthly EM&A Report for February 2012	Submitted on 14 Mar 2012
2.2	Construction Ground-borne Noise Monitoring Plan (Revision 1)	Submitted on 12 Mar 2012
2.46	Monthly EM&A Report for March 2012	Submitted on 18 Apr 2012
2.11	Groundwater Monitoring and Contingency Plan for Contract 810A (Rev. 1)	Submitted on 27 Apr 2012

EP-349/2009/F Clause No.	Document Title	Status
2.46	Monthly EM&A Report for April 2012	Submitted on 15 May 2012
2.12	CAR (Part II) for Mai Po Works Area (Site C1&D)	Submitted on 15 May 2012
2.14	Tree Planting & Landscape Plan for Yuen Long District (Remainder) (Rev. 1) – Addendum Pages	Submitted on 15 May 2012
2.11	Groundwater Monitoring and Contingency Plan for Tai Kong Po to Tse Uk Tsuen Tunnels for Contract 823A (Rev. B)	Submitted on 23 May 2012

EP-349/2009/G Clause No.	Document Title	Status
2.46	Monthly EM&A Report for May 2012	Submitted on 14 Jun 2012
2.25	Updated Operational Ground-borne Noise Prediction Report	Submitted on 22 Jun 2012
2.46	Monthly EM&A Report for June 2012	Submitted on 16 Jul 2012
2.47	Baseline Ground-borne Noise Monitoring Report (Part 2)	Submitted on 18 Jul 2012
2.22	Baseline Ground-borne Noise Monitoring Report (Part 2)	Submitted on 20 Jul 2012
2.21	Technical Note for Closure Assessment at Site Q of Shek Kong Stabling Sidings (SSS)	Submitted on 23 Jul 2012
2.21	Remediation Report for Mai Po Works Area (Site E)	Submitted on 2 Aug 2012
2.21	Remediation Report for Mai Po Ventilation	Submitted on 7 Aug 2012

EP-349/2009/G Clause No.	Document Title	Status
	Building Works Area (Site E) – XRL825	
2.21	Remediation Report for Shek Kong Stabling Sidings (Site Q)	Submitted on 10 Aug 2012
2.46	Monthly EM&A Report for July 2012	Submitted on 14 Aug 2012
2.21	Contamination Assessment Report (Part II) for Mai Po Ventilation Building Works Area (Sites C1 and D) – XRL825	Submitted on 16 Aug 2012
2.37	Archaeological Watching Brief Report – Tse Uk Tsuen Works Area	Submitted on 27 Aug 2012

EP-349/2009/H Clause No.	Document Title	Status
2.21	Contamination Assessment Report (Part II) for Mai Po Ventilation Building Works Area (Site C1 and D) (Rev B)	Submitted on 10 Sep 2012
2.14	Tree Planting and Landscape Plan for Yuen Long District (Remainder) (Rev. 1) – Addendum Pages	Submitted on 11 Sep 2012
2.14	Tree Planting And Landscape Plan (TLP-7): Works In Yuen Long District (Remainder) (Rev. 1)	Submitted on 12 Sep 2012
2.46	Monthly EM&A Report for August 2012	Submitted on 14 Sep 2012
2.46	Monthly EM&A Report for September 2012	Submitted on 16 Oct 2012

EP-349/2009/I Clause No.	Document Title	Status
2.46	Monthly EM&A Report for October 2012	Submitted on 14 Nov 2012
2.47	Baseline Ground-borne Noise Monitoring Report (Part 3) (Rev A)	Submitted on 15 Nov 2012
2.21	Contamination Assessment Report (Part II) for Mai Po Ventilation Building Works Area (Site C1 and D) (Rev A)	Submitted on 27 Nov 2012
2.21	Revised Contamination Assessment Plan for Mai Po Ventilation Building Works Area (Site C1 and D) (Rev A)	Submitted on 27 Nov 2012
2.46	Monthly EM&A Report for November 2012	Submitted on 14 Dec 2012

EP-349/2009/I Clause No.	Document Title	Status
2.46	Monthly EM&A Report for December 2012	Submitted on 15 Jan 2013
2.46	Monthly EM&A Report for January 2013	Submitted on 19 Feb 2013
2.46	Monthly EM&A Report for February 2013	Submitted on 14 Mar 2013
2.46	Monthly EM&A Report for March 2013	Submitted on 16 Apr 2013
2.46	Monthly EM&A Report for April 2013	Submitted on 15 May 2013
2.46	Monthly EM&A Report for May 2013	Submitted on 17 Jun 2013

EP-349/2009/J Clause No.	Document Title	Status
2.11	Groundwater Monitoring and Contingency Plan for 826	Submitted on 11 Jul 2013
2.46	Monthly EM&A Report for June 2013	Submitted on 15 Jul 2013
2.12	Monitoring and Emergency Plan for Noise and Vibration (Contract 826 – Huanggang to Mai Po Tunnels)	Submitted on 25 Jul 2013
2.12	Monitoring and Emergency Plan in relation to potential impacts on fishponds in Mai Po area due to noise and vibration for 826	Submitted on 25 Jul 2013
2.46	Monthly EM&A Report for July 2013	Submitted on 14 Aug 2013
2.26	Updated Operational Ground-borne Noise Prediction Report	Submitted on 9 Aug 2013
2.12(ii)	Monitoring and Emergency Plan for Noise and Vibration (Contract 826 – Huanggang to Mai Po Tunnels)	Submitted on 5 Sep 2013
2.46	Monthly EM&A Report for August 2013	Submitted on 13 Sep 2013
2.46	Monthly EM&A Report for September 2013	Submitted on 16 Oct 2013
2.46	Monthly EM&A Report for October 2013	Submitted on 14 Nov 2013

EP-349/2009/K Clause No.	Document Title	Status
2.46	Monthly EM&A Report for November 2013	Submitted on 13 Dec 2013
2.46	Monthly EM&A Report for December 2013	Submitted on 15 Jan 2014

EP-349/2009/K Clause No.	Document Title	Status
2.46	Monthly EM&A Report for January 2014	Submitted on 17 Feb 2014
2.46	Monthly EM&A Report for February 2014	Submitted on 14 Mar 2014
2.46	Monthly EM&A Report for March 2014	Submitted on 14 Apr 2014
2.46	Monthly EM&A Report for April 2014	Submitted on 16 May 2014
2.46	Monthly EM&A Report for May 2014	Submitted on 16 Jun 2014

EP-349/2009/L Clause No.	Document Title	Status
2.46	Monthly EM&A Report for June 2014	Submitted on 15 Jul 2014
2.46	Monthly EM&A Report for July 2014	Submitted on 14 Aug 2014
2.46	Monthly EM&A Report for August 2014	Submitted on 15 Sep 2014
2.46	Monthly EM&A Report for September 2014	Submitted on 16 Oct 2014
2.46	Monthly EM&A Report for October 2014	Submitted on 14 Nov 2014
2.46	Monthly EM&A Report for November 2014	Submitted on 12 Dec 2014
2.46	Monthly EM&A Report for December 2014	Submitted on 15 Jan 2015
2.46	Monthly EM&A Report for January 2015	Submitted on 13 Feb 2015
2.14	Tree Planting and Landscape Plan (TLP-4): Works In Tsuen Wan District Supplementary Paper (Rev.3)	Submitted on 5 Feb 2015
2.14	Tree Planting and Landscape Plan (TLP-4): Works In Tsuen Wan District Supplementary Paper (Rev.3) Amendment Page	Submitted on 23 Feb 2015
2.46	Monthly EM&A Report for February 2015	Submitted on 13 Mar 2015
2.46	Monthly EM&A Report for March 2015	Submitted on 17 Apr 2015
2.46	Monthly EM&A Report for April 2015	Submitted on 15 May 2015
2.46	Monthly EM&A Report for May 2015	Submitted on 12 Jun 2015
2.14	Tree Planting and Landscape Plan (TLP5): Works in Tuen Mun District Supplementary Paper	Submitted on 7 Jul 2015
2.46	Monthly EM&A Report for June 2015	Submitted on 15 Jul 2015

EP-349/2009/L Clause No.	Document Title	Status
2.46	Monthly EM&A Report for July 2015	Submitted on 14 Aug 2015
2.46	Monthly EM&A Report for August 2015	Submitted on 15 Sep 2015
2.14	Tree Planting and Landscape Plan (TLP6): Works in Yuen Long District (Mai Po) Supplementary Paper	Submitted on 15 Sep 2015
2.46	Monthly EM&A Report for September 2015	Submitted on 15 Oct 2015
2.46	Monthly EM&A Report for October 2015	Submitted on 13 Nov 2015
2.46	Monthly EM&A Report for November 2015	Submitted on 14 Dec 2015
2.46	Monthly EM&A Report for December 2015	Submitted on 14 Jan 2016
2.46	Monthly EM&A Report for January 2016	Submitted on 15 Feb 2016
2.46	Monthly EM&A Report for February 2016	Submitted on 14 Mar 2016
2.46	Monthly EM&A Report for March 2016	Submitted on 14 Apr 2016
2.46	Monthly EM&A Report for April 2016	Submitted on 16 May 2016
2.46	Monthly EM&A Report for May 2016	Submitted on 15 Jun 2016
2.46	Monthly EM&A Report for June 2016	Submitted on 15 Jul 2016
2.46	Monthly EM&A Report for July 2016	Submitted on 12 Aug 2016
2.46	Monthly EM&A Report for August 2016	Submitted on 15 Sep 2016
2.46	Monthly EM&A Report for September 2016	Submitted on 17 Oct 2016
2.46	Monthly EM&A Report for October 2016	Submitted on 18 Nov 2016
2.46	Monthly EM&A Report for November 2016	Submitted on 23 Dec 2016
2.46	Monthly EM&A Report for December 2016	Submitted on 7 Feb 2017
2.46	Monthly EM&A Report for January 2017	Submitted on 22 Feb 2017
2.46	Monthly EM&A Report for February 2017	Submitted on 14 Mar 2017
2.46	Monthly EM&A Report for March 2017	Submitted on 12 Apr 2017
2.46	Monthly EM&A Report for April 2017	Submitted on 15 May 2017
2.46	Monthly EM&A Report for May 2017	Submitted on 14 Jun 2017

EP-349/2009/L Clause No.	Document Title	Status
2.14	Tree Planting and Landscape Plan (TLP-4): Works in Tsuen Wan District Supplementary Paper 2 (Rev.0)	Submitted on 28 Jun 2017
2.46	Monthly EM&A Report for June 2017	Submitted on 14 Jul 2017
2.46	Monthly EM&A Report for July 2017	Submitted on 11 Aug 2017
2.46	Monthly EM&A Report for August 2017	Submitted on 14 Sep 2017
2.14	Tree Planting and Landscape Plan (TLP-4): Works in Tsuen Wan District Supplementary Paper 2 (Rev.2)	Submitted on 13 Oct 2017
2.46	Monthly EM&A Report for September 2017	Submitted on 16 Oct 2017
2.46	Monthly EM&A Report for October 2017	Submitted on 14 Nov 2017
2.46	Monthly EM&A Report for September 2017 (Revision 1)	Submitted on 30 Nov 2017
2.46	Monthly EM&A Report for November 2017	Submitted on 13 Dec 2017
2.46	Monthly EM&A Report for December 2017	Submitted on 12 Jan 2018
2.46	Monthly EM&A Report for January 2018	Submitted on 14 Feb 2018
2.46	Monthly EM&A Report for February 2018	Submitted on 13 Mar 2018
2.36	Commissioning Test Report for Train Noise	Submitted on 13 Mar 2018
2.14	Tree Planting and Landscape Plan (TPL-3): Works in Kwai Tsing District Supplementary Paper (Rev. 1)	Submitted on 3 Apr 2018
2.14	Tree Planting and Landscape Plan for Yau Tsim Mong District (TPL-1) (Rev. 2)	Submitted on 3 Apr 2018
2.46	Monthly EM&A Report for March 2018	Submitted on 17 Apr 2018
2.46	Monthly EM&A Report for April 2018	Submitted on 10 May 2018
2.36	Commissioning Test Report for Train Noise	Submitted on 17 May 2018
2.36	Commissioning Test Report for the Fixed Plant Noise at Kwai Chung Ventilation Building (KCV)	Submitted on 21 May 2018
2.46	Monthly EM&A Report for May 2018	Submitted on 12 Jun 2018

EP-349/2009/M Clause No.	Document Title	Status
2.46	Monthly EM&A Report for June 2018	Submitted on 13 Jul 2018
2.46	Monthly EM&A Report for July 2018	Submitted on 13 Aug 2018
2.36	Commissioning Test Report for the Fixed Plant Noise of Ventilation Building at Pat Heung (PHV), Nam Cheong (NCV) and Mongkok West (MKV)	Submitted on 2 Aug 2018
2.36	Commissioning Test Report for the Fixed Plant Noise of Ventilation Building at Mai Po (MPV), Ngau Tam Mei (NTV) and Shing Mun (SMV); Emergency Rescue Sidings (ERS) Plant Building - North and ERS Plant Building -South	Submitted on 6 Aug 2018
2.36	Commissioning Test Report for the Fixed Plant Noise at Shek Kong Stabling Sidings (SSS)	Submitted on 6 Aug 2018
2.36	Commissioning Test Report for the Fixed Plant Noise at West Kowloon Station (WEK) and Public Transport Interchange (PTI)	Submitted on 15 Aug 2018

EP-349/2009/N Clause No.	Document Title	Status
2.27	Noise Review Report for the Additional Train Operation Scenarios	Submitted on 3 Sep 2018
2.36	Commissioning Test Report (all parts)	Submitted on 12 Sep 2018
2.46	Monthly EM&A Report for August 2018	Submitted on 12 Sep 2018
2.46	Monthly EM&A Report for September 2018	Submitted on 11 Oct 2018

6.2 Statutory Permits and Licenses

Other than Environmental Permit, relevant environmental permits and licenses had been applied in the reporting period of the Project by the Contractors in accordance with related legislative ordinances and regulations, including wastewater discharge licenses, registration as Chemical Waste Producer, billing account for disposal of Construction Waste, Construction Noise Permits and etc. Details of these permits and licenses can be referred to the respective Monthly EM&A Reports in the reporting periods.

7 SITE INSPECTIONS

7.1 Observations

Regular site inspections were undertaken by the ET and respective Contractors in accordance with the EM&A Manual. The Contractors' performances on environmental matters were assessed and found in an acceptable manner. The inspection findings and the associated recommendations on improvement to the environmental protection and pollution control works were raised to the Contractors for reference and/or action. Even though some of the actions had not been taken in the agreed time, but it could be still concluded that the environmental protection and pollution control works had been implemented satisfactorily.

7.2 Other Notable Events

7.2.1 XRL Operation

Operation of XRL has been commenced on 23 September 2018.

7.2.2 IEC Site Inspections

The IEC conducted site inspections for the XRL Project Works Areas on monthly basis. Irregularities/observations were made during the site inspections; the respective Contractors had followed up and rectified the identified issues.

7.2.3 Remaining Works

After the Operation of XRL has been opened in September 2018, the remaining works for the Project would be correcting the defects wherever necessary. As the work should be undertaken in the restricted hours with valid construction noise permit (CNP), hence no impact monitoring would be expected with reference to the EM&A Manual.

Besides, the design and construction of Nam Cheong Park Reinstatement will be the only exception after the Operation of XRL; hence the EM&A programme and regular site inspections would be maintained for this area (i.e. Works Area T) until the completion of its construction activities.

7.2.4 Termination of XRL Project EM&A programme

As all the major civil works, except Nam Cheong Park Reinstatement have been completed for the Project, this final Environmental Monitoring and Audit (EM&A)

Report presents the results of EM&A works and the construction impact monitoring during construction period from March 2010 to September 2018.

In view of completion of construction works that have potential to cause significant environmental impact for the Project, it is proposed to terminate all relevant dust and noise monitoring works, except the noise monitoring at monitoring station CN28 for impact noise monitoring after 29 September 2018.

8 REVIEW AND CONCLUSIONS

8.1 Review of the XRL Project EIA Predictions, Effectiveness and Efficiency of Mitigation Measures

The environmental impact hypotheses with respect to construction air quality and construction noise detailed in the XRL Project EIA Report had been tested throughout the construction stage of the Project by the regular construction impact monitoring. The environmental impact hypotheses are found to be in order generally throughout the construction stage of the XRL Project.

Based on the findings of the regular construction impact monitoring results of the reporting period; the validity of the XRL Project EIA predictions can be concluded and the effectiveness and efficiency of the mitigation measures implemented were found to be satisfactory.

In conclusion, the current practices regarding the performance of the environmental management system are found to be satisfactory and should be maintained. Also the environmental mitigation measures as recommended in the approved XRL Project EIA Report had been concluded to be implemented satisfactorily.

8.2 Conclusions

The Final Environmental Monitoring and Audit (EM&A) Report presents the results of EM&A works and the impact monitoring for the construction works under the XRL project undertaken during the construction period from March 2010 to September 2018.

Impact monitoring for air quality and air-borne noise were conducted in accordance with the EM&A Manual in the reporting period. 89 nos. of 24-hour TSP Action Levels and 11 no. of 24-hour TSP Limit Levels exceedances were recorded in the reporting period. However, all of them were found non-Project related after the investigations, hence it could be concluded that the construction activities did not have a noticeable adverse effect on the general air quality for the Project.

42 nos. of exceedance of air-borne noise Action Levels and 127 nos. of exceedance of air-borne Limit Levels were recorded in the reporting period. Relevant actions have been taken by the contractor to control the noise impact in accordance with the recommendations in EIA and EM&A manual

In the reporting month, 268 nos. environmental complaints related to the Project had been referred from EPD. The complaint has been handled in accordance with the procedures stipulated in the EM&A Manual with investigations in the respective monthly EM&A Reports.

There were 9 successful environmental prosecutions out of 30 nos. has been recorded in the reporting period. Besides, 2 non-compliances, 4 warning letters and 3 yellow forms have been made in the reporting period from March 2010 to September 2018.

Site inspections were conducted by the Environmental Team (ET) on a weekly basis to monitor proper implementation of environmental pollution control and mitigation measures for the XRL Project.

The latest Environmental Permit (EP-349/2009/N) issued by EPD on 20 August 2018 is used for the XRL Project.

In the reporting period, there was no reporting change of circumstances which may affect the compliance with the recommendations of the EIA Report.

It is concluded from the environmental monitoring and audit works that the Hong Kong Section of Guangzhou - Shenzhen - Hong Kong Express Rail Link Project were undertaken in an appropriately environmentally sensitive manner during the reporting period. The environmental protection and pollution control measures provided by the Contractors were generally acceptable apart from some minor irregularities which were rectified timely by the respective civil works contractors.

The ET will continue the implementation of the environmental monitoring and audit programme in accordance to the EM&A Manual and to a level consistent with MTRCL's Corporate Sustainability Policy for Works Area T.

Appendix A

Project Works Areas

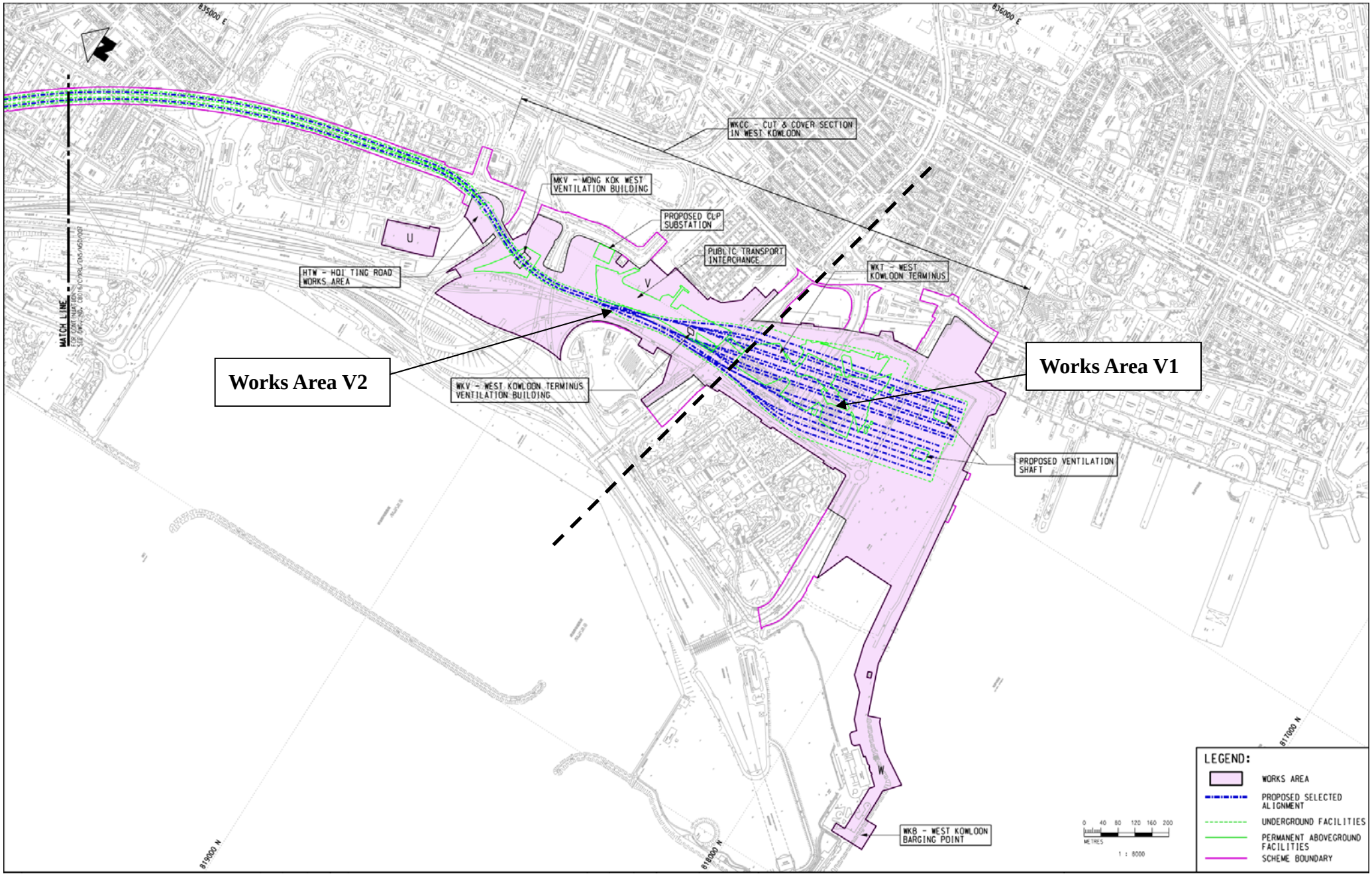
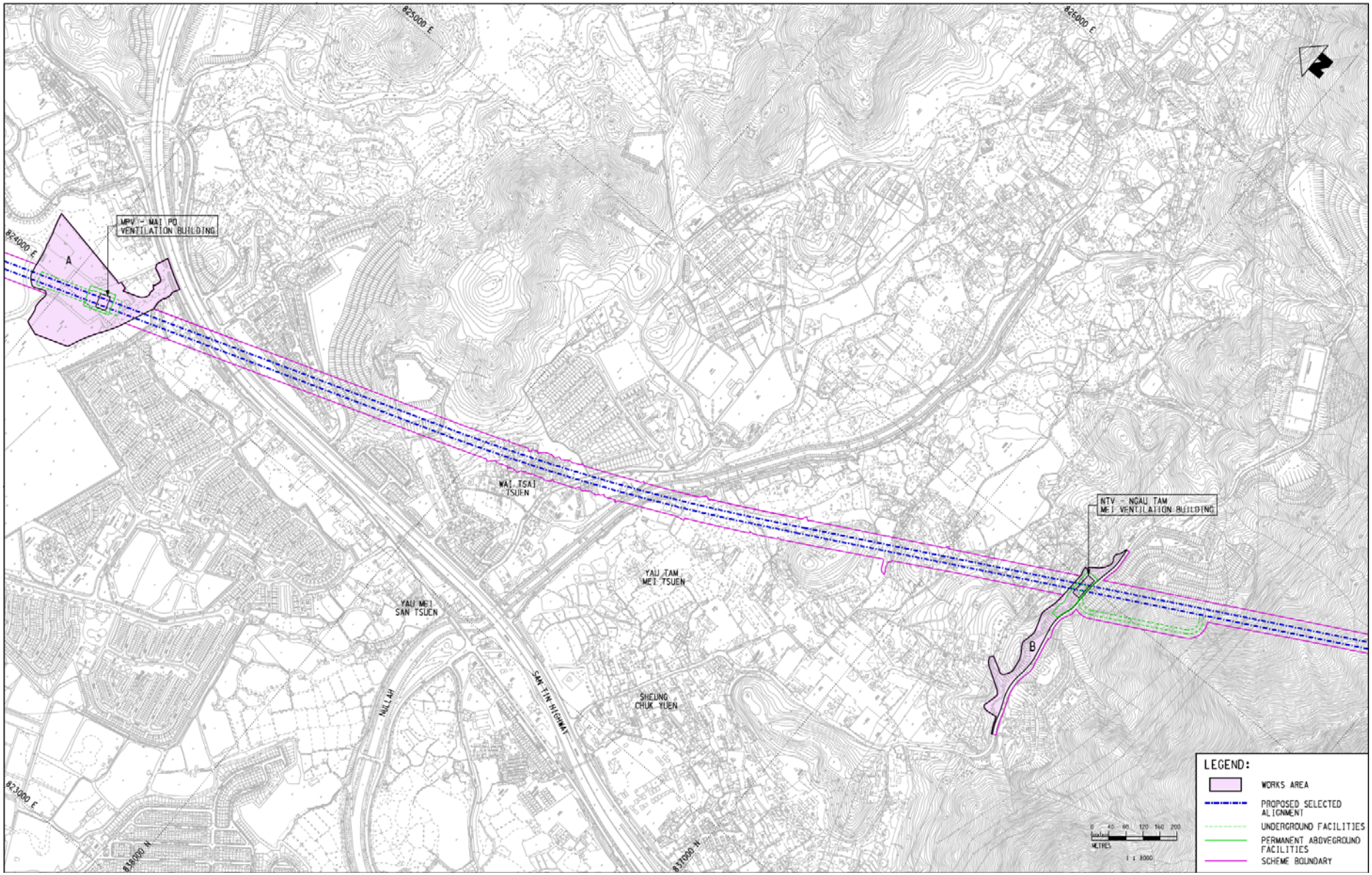
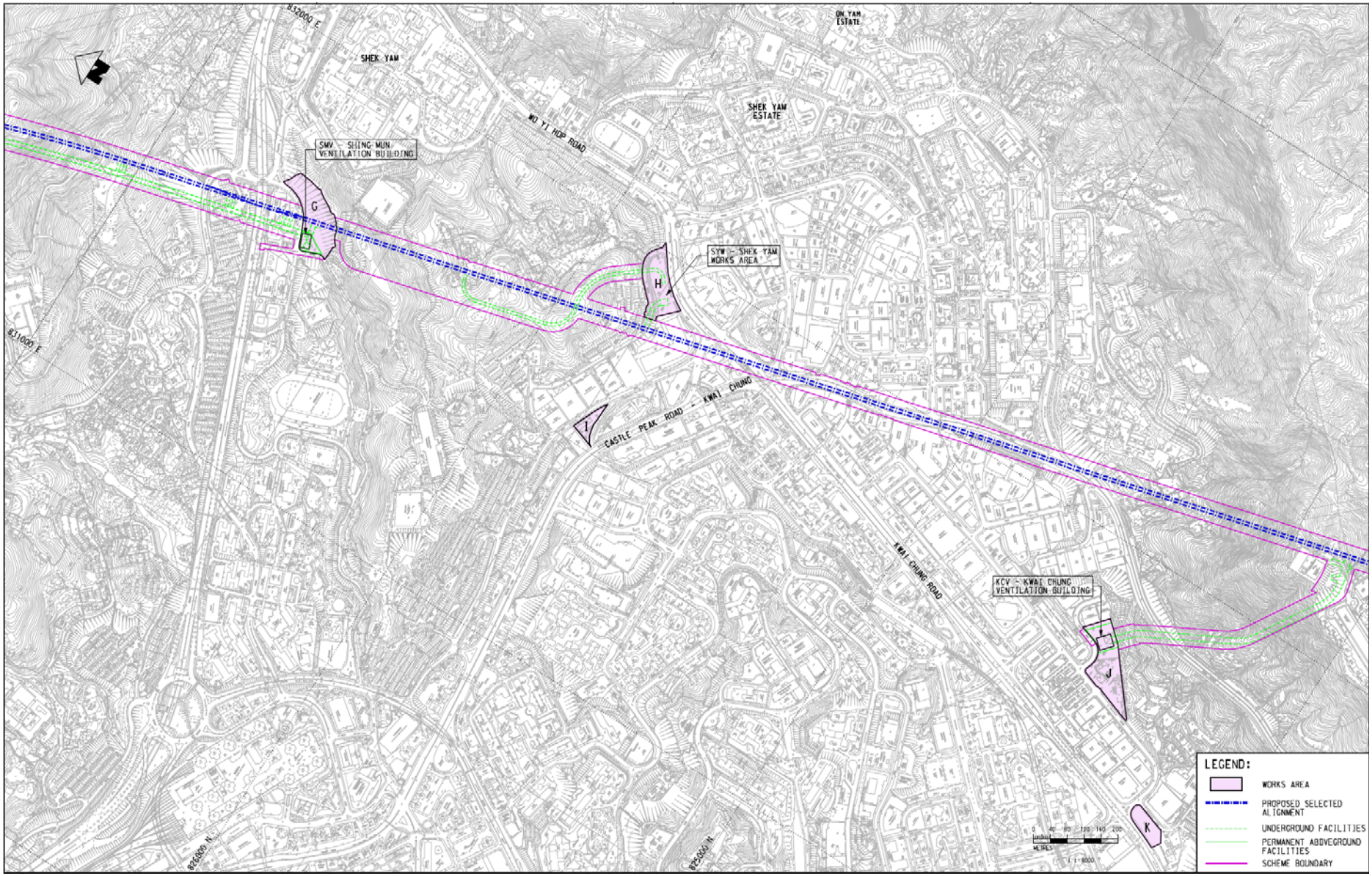
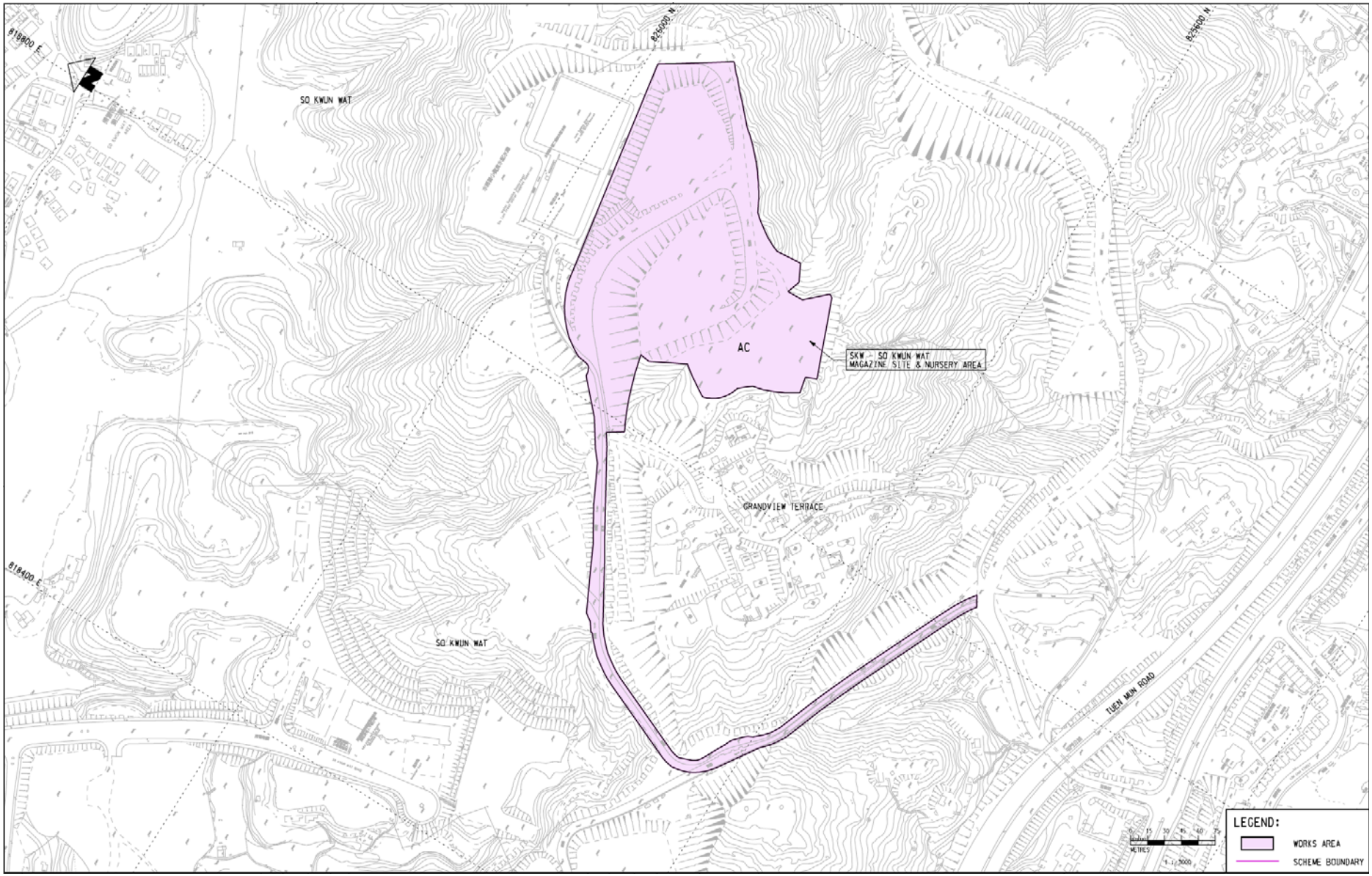
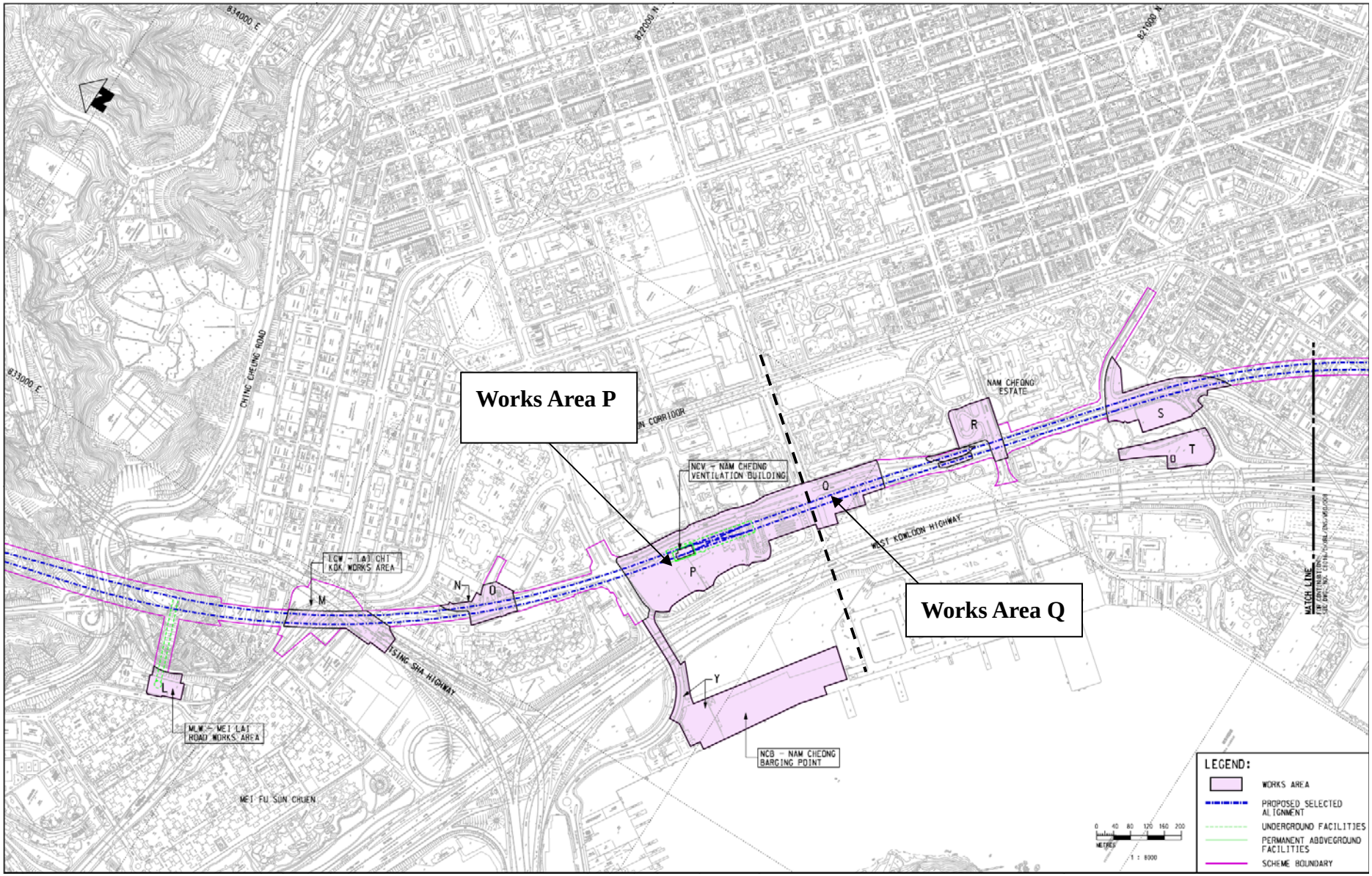


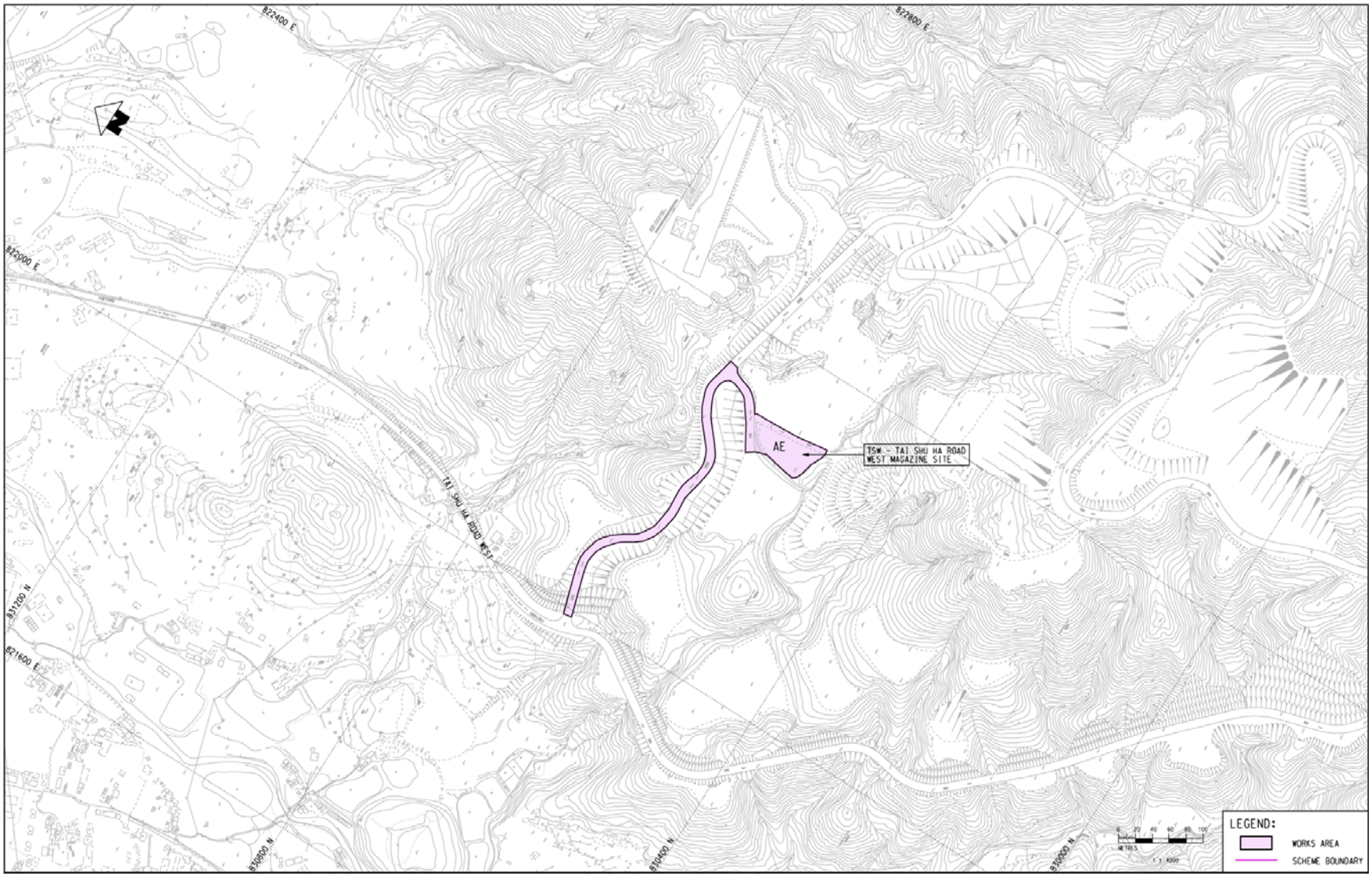
Figure 1 – Works Area

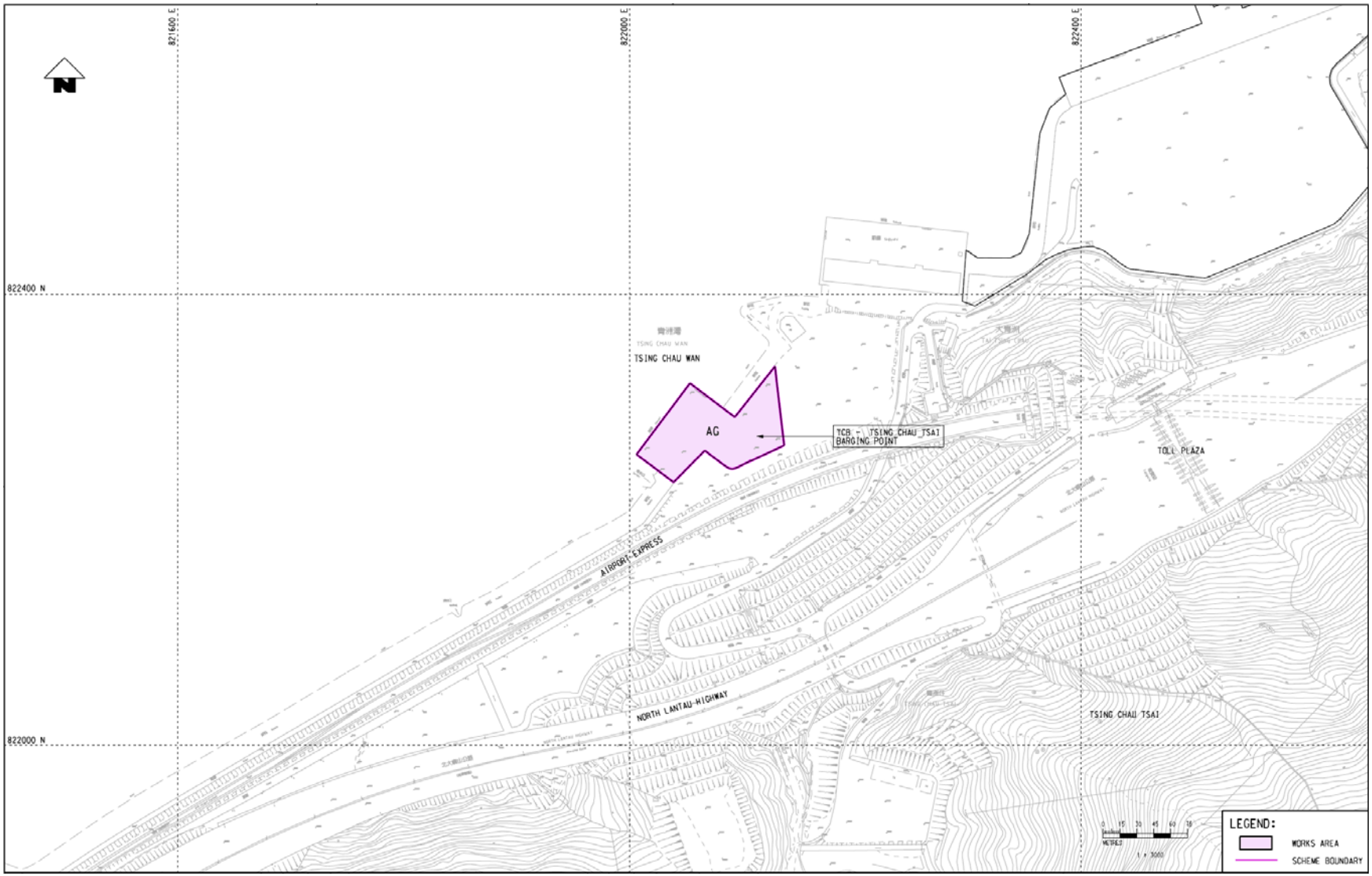

824000 E
825000 E
826000 E
821000 E
838000 N
837000 N
MPV - MAI PO VENTILATION BUILDING
A
NTV - NGAU TAM MEI VENTILATION BUILDING
B
WAI TSAI TSUEN
YAU TAM MEI TSUEN
YAU MEI SAN TSUEN
SHEUNG CHUK YUEN
NULLAH
SAN TIN HIGHWAY
LEGEND:
WORKS AREA
PROPOSED SELECTED ALIGNMENT
UNDERGROUND FACILITIES
PERMANENT ABOVEGROUND FACILITIES
SCHEME BOUNDARY
0 40 80 120 160 200
METRES
1 : 8000

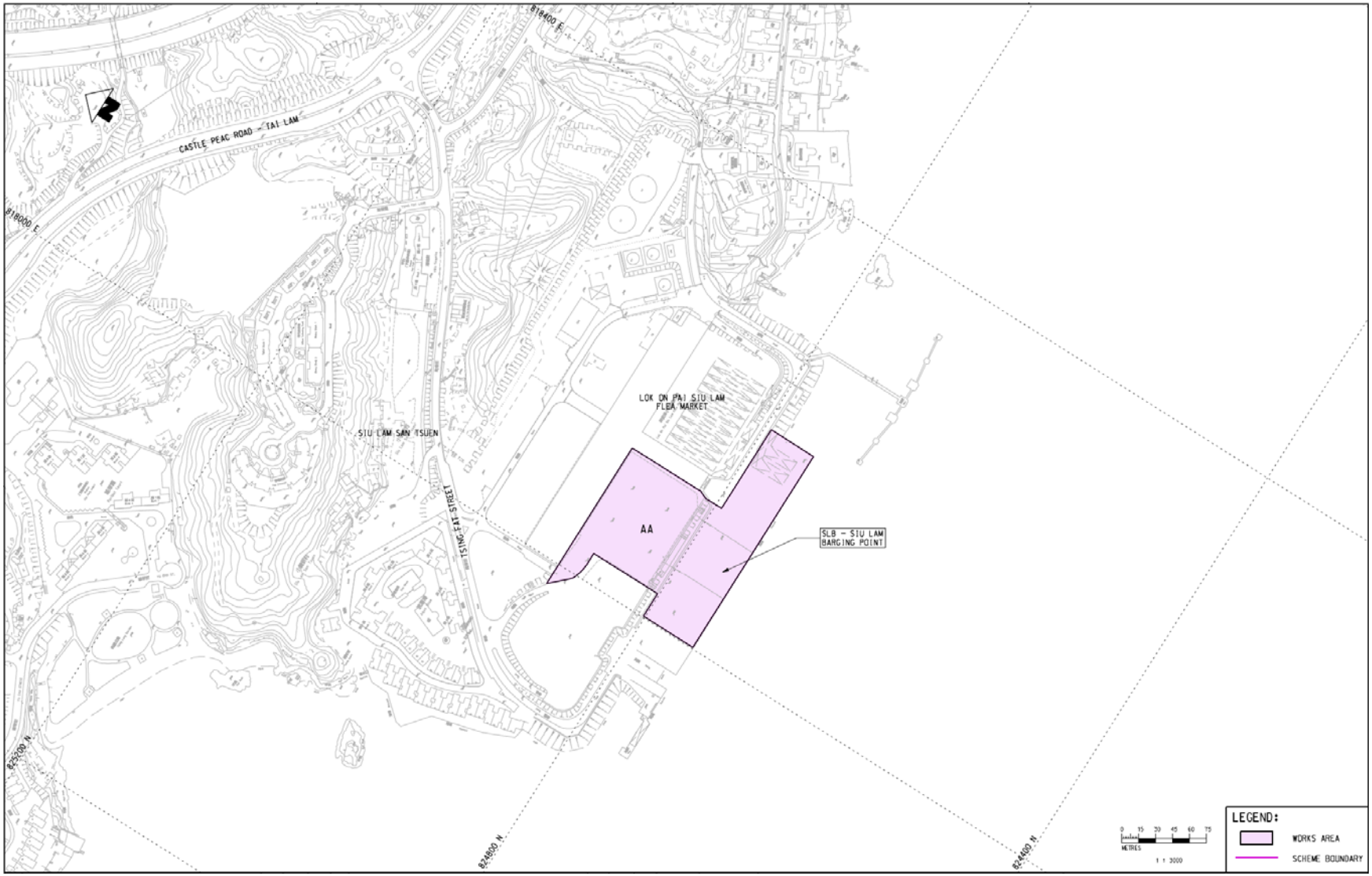

812000 E
831000 E
825600 N
825000 N
SHEK YAM
ON YAM ESTATE
SHEK YAM ESTATE
WO YI HOP ROAD
SMV - SHING MUN VENTILATION BUILDING
SYW - SHEK YAM WORKS AREA
CASTLE PEAK ROAD - KWAI CHUNG
KWAI CHUNG ROAD
KCV - KWAI CHUNG VENTILATION BUILDING
G
H
I
J
K
LEGEND:
WORKS AREA
PROPOSED SELECTED ALIGNMENT
UNDERGROUND FACILITIES
PERMANENT ABOVEGROUND FACILITIES
SCHEME BOUNDARY
METRES
1 : 8000

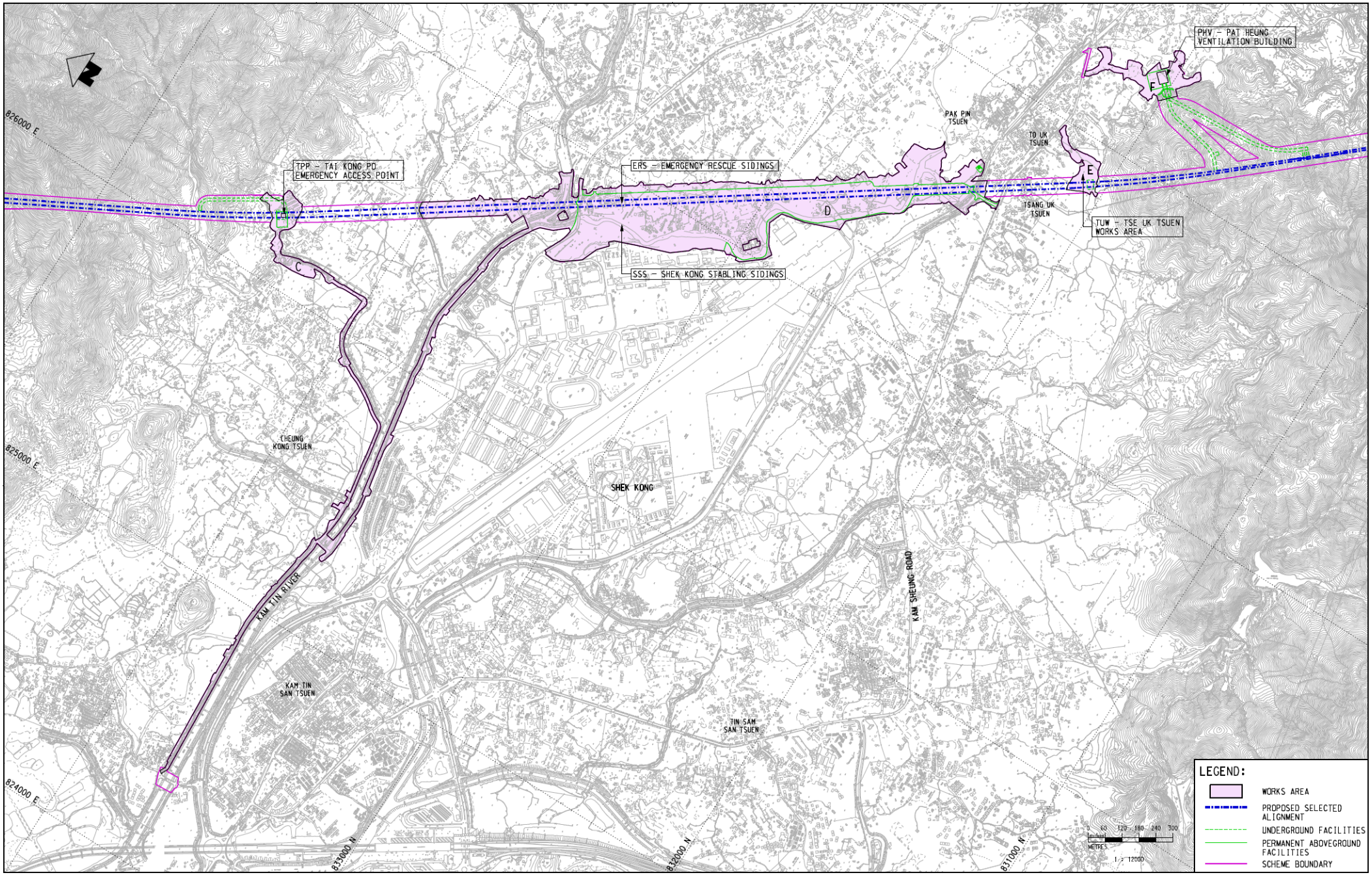

818800 E
818400 E
825600 N
825600 N
SO KWUN WAT
SO KWUN WAT
SO KWUN WAT
AC
SKW – SO KWUN WAT
MAGAZINE SITE & NURSERY AREA
GRANDVIEW TERRACE
TUEN MUN ROAD
METRES
1 : 5000
LEGEND:
WORKS AREA
SCHEME BOUNDARY

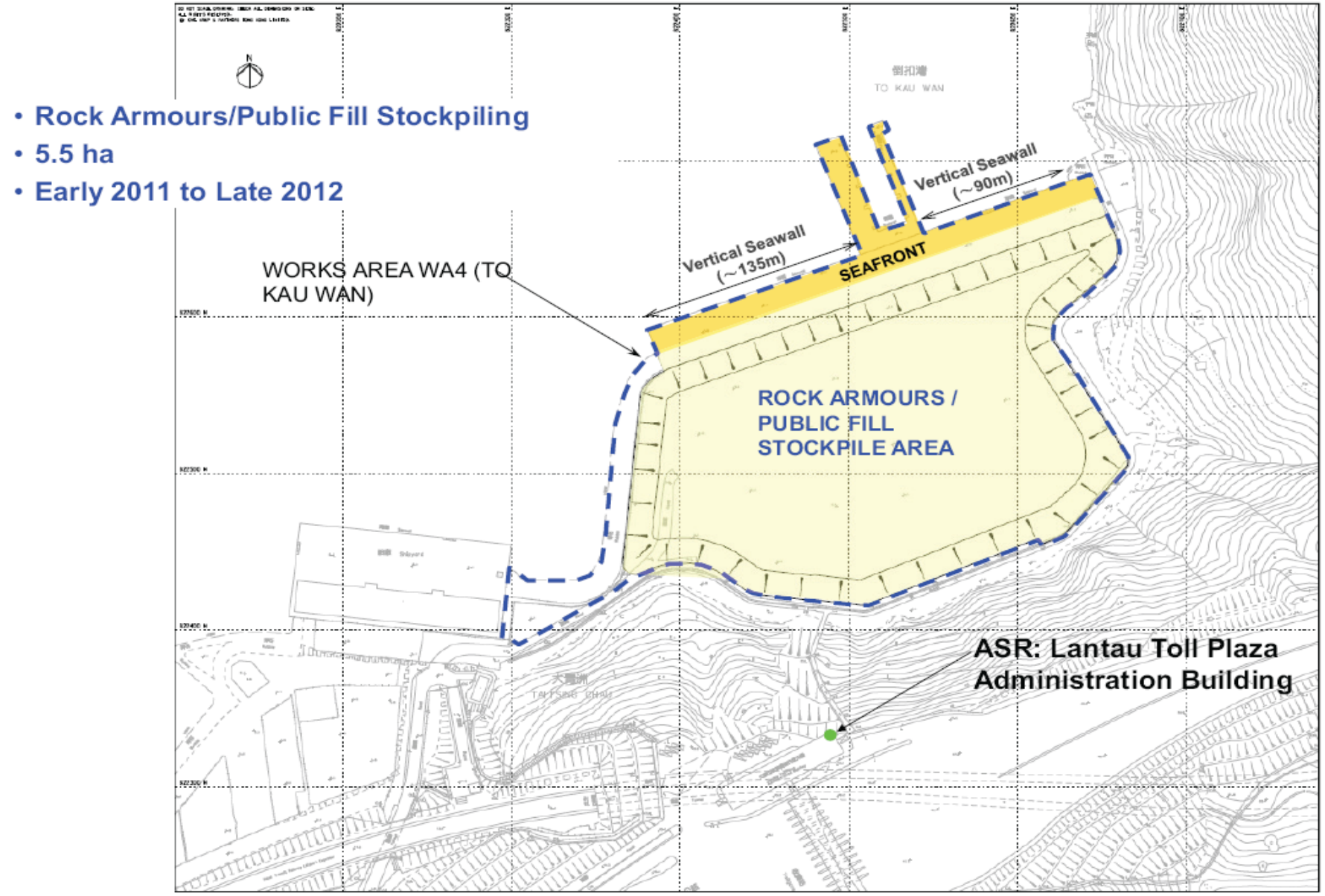

Works Area P
Works Area Q
834000 E
833000 E
822000 N
821000 N
CHING CHEUNG ROAD
NAM CHEONG ESTATE
NCV - NAM CHEONG VENTILATION BUILDING
WEST KOWLOON HIGHWAY
LCW - LAI CHI KOK WORKS AREA
MLW - MEI LAI ROAD WORKS AREA
TSING SHA HIGHWAY
MEI FU SUN CHUEN
NCB - NAM CHEONG BARGING POINT
MATCH LINE
LEGEND:
WORKS AREA
PROPOSED SELECTED ALIGNMENT
UNDERGROUND FACILITIES
PERMANENT ABOVEGROUND FACILITIES
SCHEME BOUNDARY
METRES
1 : 8000


822400 E
822800 E
822000 E
821600 E
831200 N
830800 N
830400 N
830000 N
AE
TSW - TAI SHU HA ROAD WEST MAGAZINE SITE
TAI SHU HA ROAD WEST
LEGEND:
WORKS AREA
SCHEME BOUNDARY

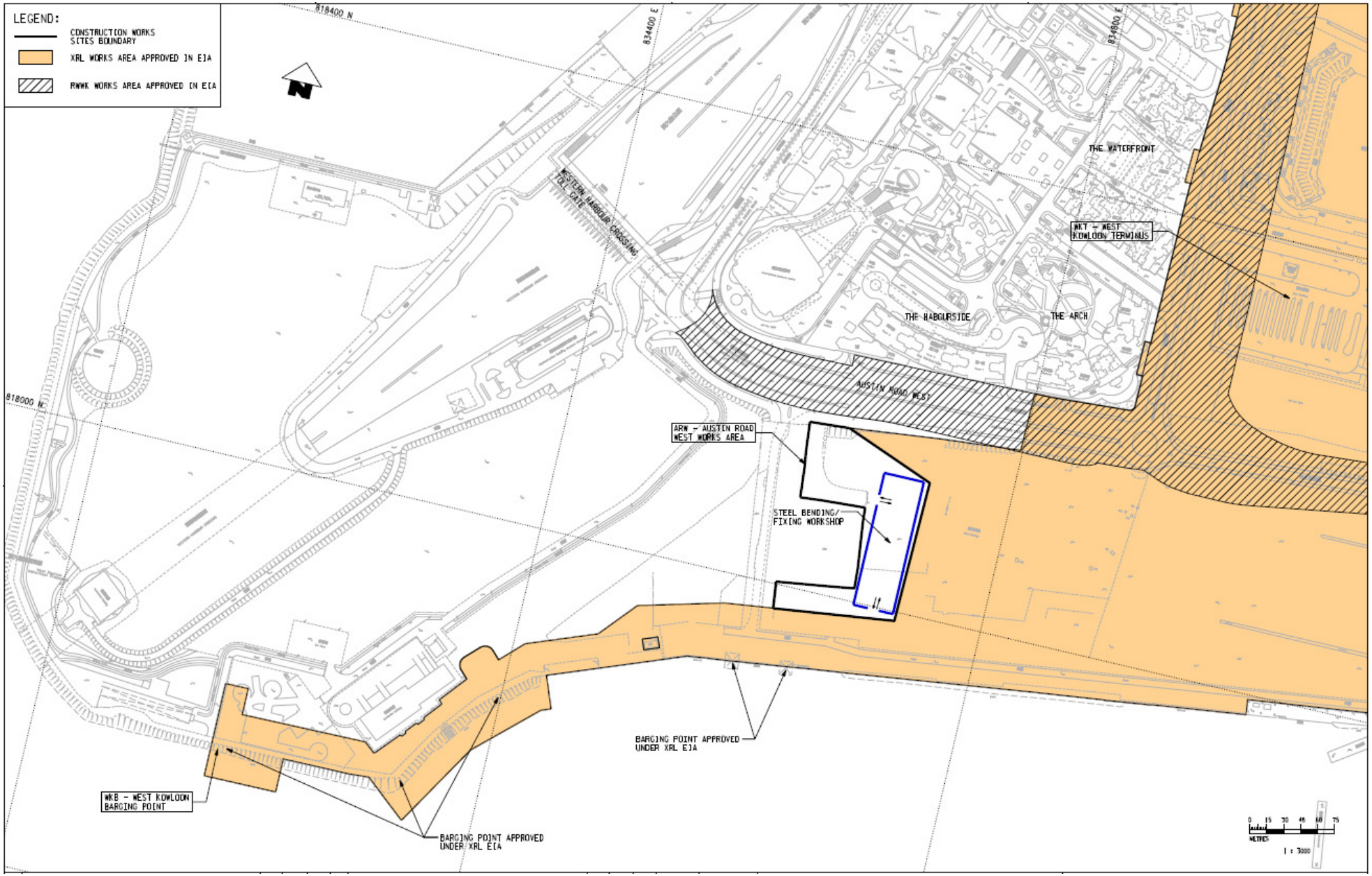

821600 E
822000 E
822400 E
822400 N
822000 N
TSING CHAU WAN
AG
TCB - TSING CHAU TSAI BARGING POINT
TOLL PLAZA
AIRPORT EXPRESS
NORTH LANTAU HIGHWAY
TSING CHAU TSAI
LEGEND:
WORKS AREA
SCHEME BOUNDARY

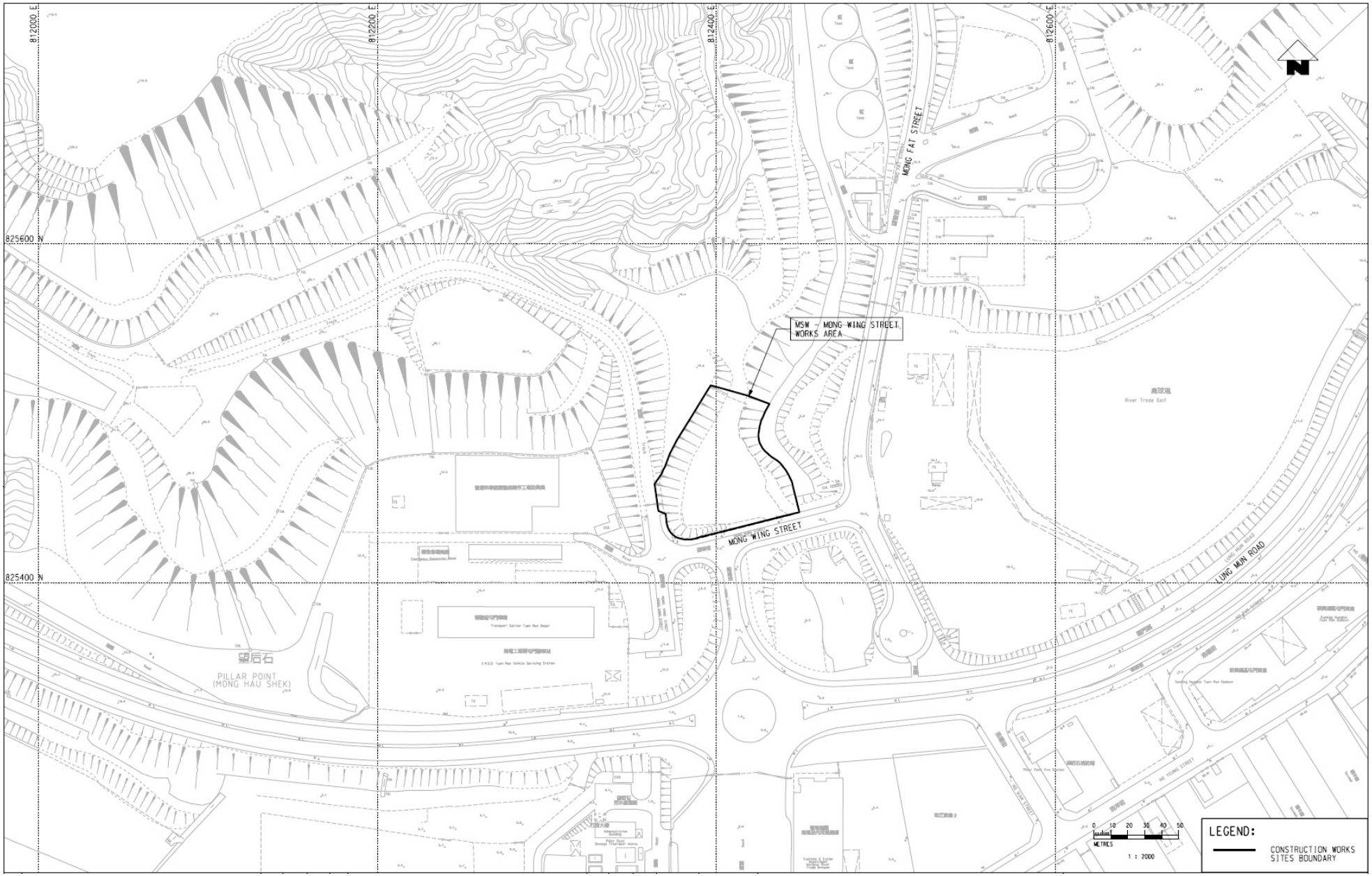

818400 E
CASTLE PEAK ROAD - TAI LAM
818000 E
LOK ON PAI SIU LAM
FLEA MARKET
SIU LAM SAN TSUEN
TSING FAT STREET
AA
SLB - SIU LAM
BARGING POINT
822200 N
824800 N
824400 N
0 15 30 45 60 75
METRES
1 : 3000
LEGEND:
WORKS AREA
SCHEME BOUNDARY

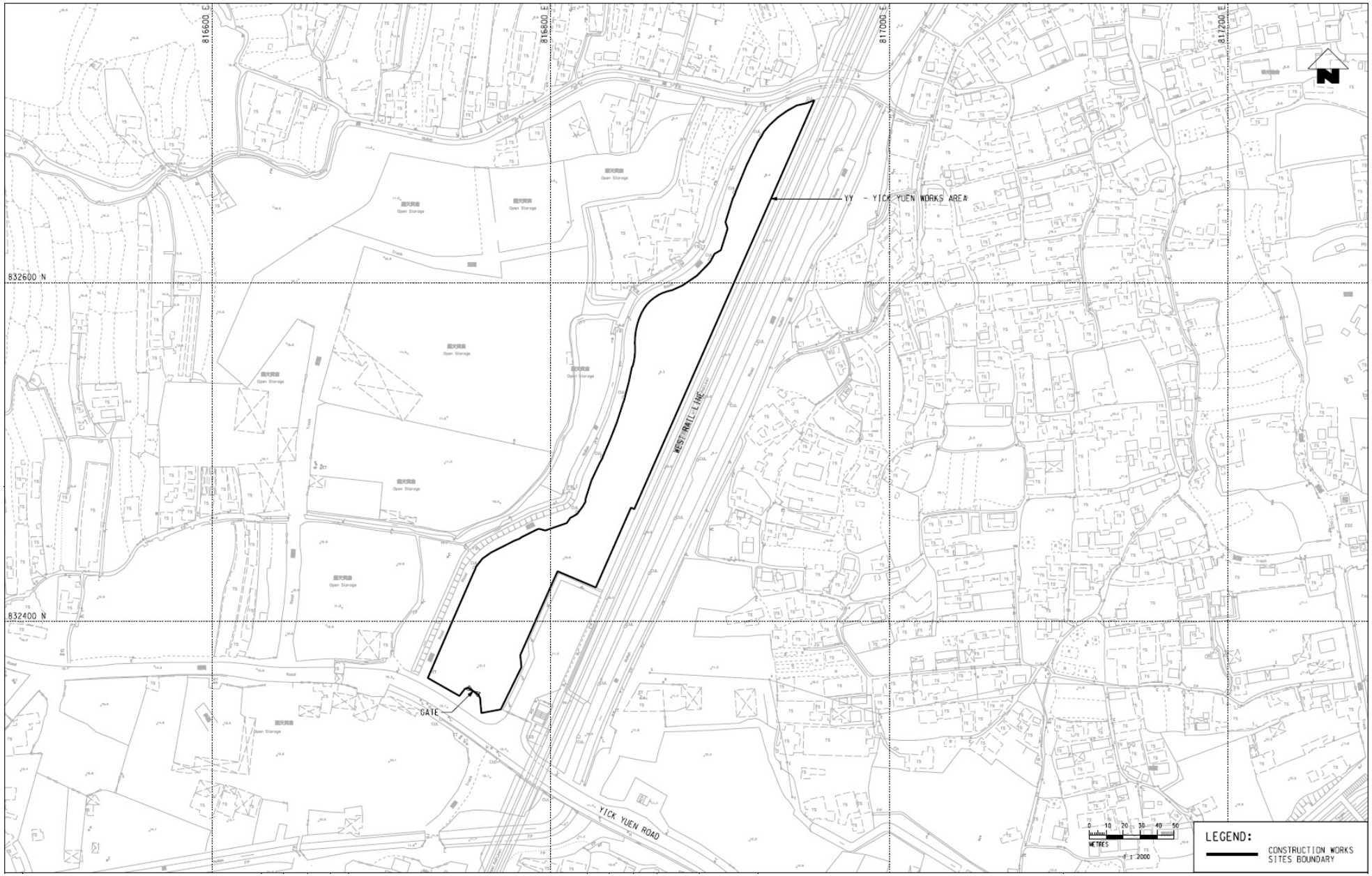

PHV – PAT HEUNG VENTILATION BUILDING
F
PAK PIN TSUEN
TO UK TSUEN
E
TSANG UK TSUEN
TUW – TSE UK TSUEN WORKS AREA
TPP – TAI KONG PO EMERGENCY ACCESS POINT
ERS – EMERGENCY RESCUE SIDINGS
D
SSS – SHEK KONG STABLING SIDINGS
C
826000 E
825000 E
824000 E
CHEUNG KONG TSUEN
SHEK KONG
KAM TIN RIVER
KAM TIN SAN TSUEN
TIN SAM SAN TSUEN
KAM SHEUNG ROAD
833000 N
832000 N
831000 N
0 60 120 180 240 300
METRES
1 : 12000
LEGEND:
WORKS AREA
PROPOSED SELECTED ALIGNMENT
UNDERGROUND FACILITIES
PERMANENT ABOVEGROUND FACILITIES
SCHEME BOUNDARY



MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link Environmental Review Report – Stock Piling Facility in To Kau Wan	SCALE	N.T.S.	DATE	Dec-10
	Location Plan for To Kau Wan Stockpiling Area	DRAWING NO.	Figure 2.1		


LEGEND:
CONSTRUCTION WORKS SITES BOUNDARY
XRL WORKS AREA APPROVED IN EIA
RWWK WORKS AREA APPROVED IN EIA
818400 N
834400 E
834800 E
818000 N
WESTERN HARBOUR CROSSING TOLL GATE
THE WATERFRONT
WKT - WEST KOWLOON TERMINUS
THE HABOURSIDE
THE ARCH
AUSTIN ROAD WEST
ARW - AUSTIN ROAD WEST WORKS AREA
STEEL BENDING/ FIXING WORKSHOP
BARGING POINT APPROVED UNDER XRL EIA
WKB - WEST KOWLOON BARGING POINT
BARGING POINT APPROVED UNDER XRL EIA
METRES
1 : 3000


812000 E
812200 E
812400 E
812600 E
825600 N
825400 N
MSW - MONG WING STREET WORKS AREA
MONG FAT STREET
MONG WING STREET
LUNG MUN ROAD
PILLAR POINT
(MONG HAU SHEK)
望后石
River Trade Golf
0 10 20 30 40 50
METRES
1 : 2000
LEGEND:
CONSTRUCTION WORKS SITES BOUNDARY


816600 E
816800 E
817000 E
817200 E
832600 N
832400 N
YY - YICK YUEN WORKS AREA
WEST RAIL LINE
GATE
YICK YUEN ROAD
0 10 20 30 40 50
METRES
1 : 2000
LEGEND:
CONSTRUCTION WORKS SITES BOUNDARY

Appendix B

Project Management Organization and Contacts of Key Personnel

Title	Name	Telephone
Engineer's Representative		
Construction Manager (810A and 811B)	Mr. Nelson YEUNG	2829 2384
Construction Manager (810B)	Mr. Edmond SO	2926 9062
Senior Construction Engineer (802, 805, 820, 821 & 822)	Mr. Wilfred Chan	3519 4119
Construction Manager (Acting) (823A, 823B, 824, 825 & 826)	Mr. Eric Chan	2262 4788
Independent Environmental Checker		
Independent Environmental Checker	Mr. Eric Ching	2828 5825
Environmental Team		
Environmental Team Leader	Mr. Raymond WONG	2208 3510
Contractor		
Contract 802 Contractor		
Project Manager	Mr. Frankie Lam	6021 2602
Environmental Officer	Ms. Andy Leung	9489 0035
Contract 805 Contractor		
Project Manager	Mr. Richard Chan	6348 8550
Environmental Engineer / Officer	Mr. Justin Lai	6330 6726
Contract 810A Contractor		
Principle Project Director	Mr. Adrian Clamp	6468 7678
Senior Environmental Officer	Mr. Dominic Fung	9664 2565
Contract 810B Contractor		
Project Director	Mr. Jeremy Matterson	6629 4430

Title	Name	Telephone
Environmental Officer	Ms. Diana Lee	9317 1219
Contract 811A Contractor		
Project Director	Mr. Mike O'Hanlon	2561 8072
Quality, Safety and Environmental Manager	Mr. Nick Lau	2164 2810
Environmental Officer (Deputy)	Miss Margaret Chung	9725 3895
Contract 811B Contractor		
Project Manager	Mr. Brian Gowran	2269 1517
Environmental Officer	Ms. Sammie Chan	2269 1507
Contract 820 & 821 Contractor		
Project Director	Mr. Alain Hervio	2215 6600 / 6112 9197
Senior QSE Manager	Mr. Y. T. So	2215 6631 / 9307 8728
Environmental Officer (820 & 821)	Ms. Gemini Lam	9430 9104
Contract 822 Contractor		
Project Manager	Mr. David Hutchinson	9738 8779
Environmental Officer	Ms. Lighting Chan	3552 2386
Contract 8217 Contractor		
Project Manager	Mr. Simon Lam	9342 7615
Environmental Officer	Mr. Zeno Fung	9215 8681
Contract 823A & B Contractor		
Project Director	Mr. Austen Hankinson	2411 7600
Environmental Officer	Mr. Calvin Chan	2411 7608
Contract 824 Contractor		
Works Manager	Mr. Russell Lang	9200 4157
Environmental Officer	Mr. Snow Ho	6099 4479

Title	Name	Telephone
Contract 825 Contractor		
Project Manager	Mr. Nakayama	2482 8101
Environmental Officer	Mr. Chan Sze Ming	9384 5494
Contract 826 Contractor		
Project Manager	Mr. Steven Meredith	2774 9886
Environmental Officer	Mr. Ryan Wong	2774 9886

Appendix C

Implementation of Environmental Mitigation Measures

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Ecological Impact (Detailed design Phase / Pre-construction Phase)						
S3.398	- Prior to commencement of channel works, an ecological habitat management plan should be prepared to provide the detailed specifications for the habitats and ecological functions to be provided, and control of colonization of invasive plant species at the mitigation stream habitats and define the long-term management and ecological monitoring and audit requirements for these habitats.	To mitigate the avoidable loss of watercourse habitat	MTR	SSS	Detailed design phase / Prior to commencement of channel works	Ecological Habitat Management Plan (EHMP) formulated and submitted to EPD
S3.388 - S3.397	- The constructed channel in the SSS site should include open channel with ecologically friendly stream feature to mitigate the direct impact due to the loss of a watercourse habitat in Shek Kong.	To mitigate the avoidable loss of watercourse habitat	MTR / DDC	SSS	Detailed design phase	AFCD's comment has been sought during formulation of the EHMP
S3.410	- The implementation details of the impact monitoring programme should be described in ecological monitoring plan for EPD approval before commencement of construction activities.	To outline details of ecological impact monitoring	MTR	MPV, TPP, SSS / ERS, PHV and TUW	Before commencement of construction activities	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S3.327 & S3.412	- A monitoring and emergency response plan (to be prepared by the Contractor), in relation to potential impacts due to groundwater drawdown, will form part of the EM&A requirement in the EM&A Manual subject to approval by EPD and AFCD before commencement of the tunnelling and MPV construction in Mai Po area. The plan should include, but not be limited to, details of monitoring locations and programme, a mechanism to monitor the implication from the works to the groundwater system and fish pond, action levels and emergency responses such as immediate action, remedial action and investigation.	To detect potential impacts due to groundwater drawdown	Contractor	MPV	Before commencement of the tunnelling and MPV construction	AFCD's comment has been sought during formulation of Plan
S3.413	- A monitoring and emergency response plan, in relation to impacts due to noise/vibration, should form part of the EM&A requirement in the EM&A Manual subject to approval by EPD and AFCD before commencement of the tunnelling and MPV construction in Mai Po area.	To detect and monitor noise / vibration impacts	Contractor	MPV	Before commencement of bore tunnelling and MPV construction	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Ecological Impact (Construction Phase)						
S3.325 - S3.326	- Implementation of precautionary measures during tunnelling works.	To avoid potential hydrogeological impacts	Contractor	All works areas	Construction phase	Implemented
S3.409 to S3.410	- Ecological impact monitoring focusing on habitats and species of conservation interest should be conducted during the construction phase at the MPV, TPP, SSS / ERS, PHV, and TUW sites where a number of avifauna of conservation interest (e.g. overwintering bird, Greater Painted-snipe) and areas of conservation interest (e.g. country parks, conservation areas, and wetlands) were recorded. - Avifaunal communities should be surveyed quantitatively along transects. Birds heard or seen along the transects should be identified to species and counted. The nature of construction works within works area conducting during each impact monitoring visit should also be recorded. The quantitative monitoring results should be compared to pre-construction condition. The impact monitoring results should be undertaken by qualified ecologist(s) with relevant working experience.	To monitor potential indirect construction impacts to wildlife	MTR	MPV, TPP, SSS / ERS, PHV, and TUW	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S3.409 – S3.410	- Should any unpredicted indirect ecological impacts arising from the proposed Project be detected, remedial measures should be developed and implemented by the Contractor.	To monitor potential indirect construction impacts to wildlife	Contractor	MPV, TPP, SSS / ERS, PHV, and TUW	Construction phase	Implemented
S3.327 & S3.412	- Implementation of the groundwater monitoring and emergency response plan.	To detect and minimize hydrological impacts	Contractor	MPV	Construction phase (During bore tunneling works and construction of Mai Po Ventilation Shaft)	Implemented
S3.413	- Implementation of monitoring and emergency response plan on noise and vibration.	To detect and minimize noise / vibration impacts	Contractor	MPV	Construction phase (During bore tunneling works and construction of Mai Po Ventilation Shaft)	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S3.364 -S3.369	- Use of quiet construction plant and temporary noise barriers. - Access to the ventilation building sites should follow existing access roads, such as the maintenance access along the existing drainage channels. - Site hoarding of about 2.4 m high should be erected around the works area of access roads along drainage channels in the TPP and SSS / ERS sites. - Gate and fences should be installed along the construction accesses that are adjacent to public areas. - Gates and hoardings should be provided at the entrances/exits and along the boundary of the works areas respectively to prevent any trespassers from encroaching or will fully disturbing any wild animals and their habitats within the works areas. - A trip-ticket system should be adopted to monitor the disposal of construction and demolition materials. CCTV and warning signs should be provided at the entrance of the proposed temporary and permanent vehicular access.	To minimize impacts to surrounding habitats	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
3.370 -3.371 and 3.373	- Vegetation located within the works areas should be preserved as far as practicable. - To avoid soil compaction, heavy machinery should not be used in close proximity to vegetation. Soils that become compacted through the activities of the development should be loosened to an appropriate depth to allow seed germination. - All temporarily affected habitats should be reinstated after the completion of works. - Placement of equipment or stockpiles should be confined to designated works areas. Access routes should be confined on existing disturbed land, where practicable.	To minimize impacts to vegetation	MTR / Contractor	All works areas	Construction phase	Implemented
	- Detailed vegetation survey should be conducted in TSW site prior to commencement of site clearance.	To minimize impacts to vegetation	MTR / Contractor	TSW	Prior to commencement of site clearance	Vegetation Survey Report formulated and deposited to EPD
	- To mitigate the loss of the vegetation and habitats, planting of native species should be provided in the areas affected by the Project in TSW site, and other works area, where practicable.	To minimize impacts to vegetation	MTR / Contractor	TSW and all other works areas	Construction phase	Proposal of mitigatory planting at TSW was included in the Vegetation Survey Report.

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
						Mitigatory planting has been implemented
S3.372	- The affected individuals of Incense Tree within the NTV works area should be transplanted to nearby suitable habitats prior to the commencement of site clearance at NTV works area as far as practicable. - A detailed vegetation survey covering the affected habitat at NTV works area should be conducted by a suitably qualified botanist / ecologist to identify and record the affected individuals in order to provide details for the transplantation scheme prior to the commencement of site clearance. Feasibility and suitability of transplanting the affected individuals would be studied and suitable receptor sites would be identified. The transplantation proposal for the affected individuals should be prepared as necessary and transplantation should be supervised by a suitably qualified ecologist / horticulturist.	To minimize impacts to vegetation	MTR / Contractor	NTV	Construction phase	Vegetation survey was conducted and included in the Vegetation Survey Report. Transplantation of Incense Tree was completed

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S3.374 - S3.377	- Site hoarding of 2.4 m high should be set up along the boundary of the works areas as far as practicable.	To minimize disturbance to wildlife	Contractor	All works areas	Construction phase	Implemented
	- The erection of hoarding (2.4 m) along KT5 in the area with high Greater Painted-snipe occurrence (e.g. the proposed access road next to KT5) should avoid their breeding season, prior to construction activities in the area.			KT5 (near TPP)	Prior to the construction of access road	Implemented
	- The use of noisy construction equipment such as hydraulic breakers should be avoided at the area with high painted-snipe occurrence (e.g. the proposed access road next to KT5) during their breeding season as far as practicable.			KT5 (near TPP)	Construction phase	Implemented
	- Hoardings of 2.4 m height should be put in place before commencement of construction activities. Hoarding at the section along the northern boundary of the MPV works area should be installed first. The duration of hoarding erection should be kept as brief as practicable. - Upon the erection of site hoarding, all construction activities should be conducted within the fenced area.			MPV	Right after possession of site	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
	- Major construction site lighting should point inward and downward. Unnecessary lighting should be turned off outside working hours of the construction sites.			All works area	Construction phase	Implemented
S3.378 - S3.380	- Excavation works carried out within waterbodies should be carried out in dry season where practicable. - Excavation works within the watercourse / drainage channel should be restricted when possible to an enclosed dry section of the watercourse / drainage channel, with containment measures such as bunds and barriers used within the watercourse / drainage channel. - Site runoff should be directed towards regularly cleaned and maintained silt traps and oil / grease separators. The silt and oil / grease separators should be appropriately designed for the local drainage and ground conditions. Tightly sealed closed grab excavators should be deployed where material to be handled is wet. - The flow of the watercourse and drainage channel located with the Project Area should be maintained throughout the construction phase.	To minimize pollution to waterbodies	Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Terrestrial Ecological Impact (Post-construction)						
S3.327 & S3.412	- Implementation of the groundwater monitoring and emergency response plan.	To detect and minimize hydrogeological impacts	Contractor	MPV	Post-construction phase	Implemented
Marine Ecological Impact (Construction Phase)						
Appendix 3.6 (S1.102)	- The use of high-speed vessels should also be avoided during the construction and operation of the proposed barging point.	To minimize the indirect impact to Chinese White Dolphin habitat	Contractor	LKB	Construction phase	Implemented
Appendix 3.6 (S1.103)	- No dumping of rubbish, oil or chemicals would be allowed.	To minimize the pollution to marine habitats	Contractor	LKB	Construction phase	Implemented
Appendix 3.6 (S1.104)	- Deployment of silt curtains around the closed grab dredgers to minimize the suspended sediment impact due to dredging activities in dredging region. - To minimize impact on the gorgonians along the coastline near the dredging area, double silt curtains should be deployed around the works area.	To minimize the impact to subtidal habitats	Contractor	LKB	Construction phase	Implemented
Appendix 3.6 (S1.106)	- The number of work vessels and small crafts should be minimized. Dredging should be carried out continuously without unnecessary break to prevent unpredictable or sudden noise outbursts at random intervals.	To minimize disturbance impact on Chinese White Dolphin	Contractor	LKB	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Appendix 3.7 (S1.83)	- Mitigation measures to control water quality impacts proposed under Section 11 should be adopted.	To minimize indirect impact to intertidal and subtidal flora and fauna	Contractor	WKT	Construction phase	Implemented
Appendix 3.6 (S1.105)	- Engines of vessels moored at the barging point would be turned off to minimize unnecessary underwater noise.	To minimize disturbance impact on Chinese White Dolphin	Contractor	LKB	Construction phase	Implemented
Pond Fisheries Impact (Pre-construction Phase)						
S4.51	- A monitoring and emergency response plan, in relation to potential impacts due to groundwater drawdown, will form part of the EM&A requirement in the EM&A Manual subject to approval by EPD and AFCD before commencement of the tunnelling and MPV construction in Mai Po area. The plan should include, but not be limited to, details of monitoring locations and programme, a mechanism to monitor the implication from the works to the groundwater system and fish ponds including their water levels, action levels and emergency responses such as immediate action, remedial action and investigation.	To detect and minimize potential hydrological impacts	Contractor	MPV	Pre-construction phase (Before commencement of the tunnelling and MPV construction)	AFCD's comment has been sought during formulation of Plan

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S4.52	- A monitoring and emergency response plan, in relation to impacts due to noise/vibration, should form part of the EM&A requirement in the EM&A Manual subject to approval by EPD and AFCD before commencement of the tunnelling and MPV construction in Mai Po area.	To detect and monitor noise / vibration impacts	Contractor	MPV	Pre-construction phase (Before commencement of bore tunnelling and MPV construction)	Implemented
S4.45	- Consultation should be conducted with fish operators in Mai Po before tunnelling starts. The method of construction, potential impact and mitigation measures should be fully explained to the operators at the meeting.	Engagement of stakeholders	Contractor / MTR	MPV	Pre-construction phase (Before commencement of tunneling works)	Implemented
Pond Fisheries Impact (Construction Phase)						
S4.51	- Implementation of the groundwater monitoring and emergency response plan.	To detect and minimize hydrogeological impacts	Contractor	MPV	Construction phase (During bore tunneling works and construction of Mai Po Ventilation Shaft)	Implemented
S4.52	- Implementation of the monitoring and emergency response plan on noise and vibration.	To detect and minimize noise / vibration impacts	Contractor	MPV		Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S4.40	- Good site practices and proper dust and water quality control measures should be implemented. These include site confinement with fencing/hoarding erection at the perimeter of the works area, stockpile covering by impervious sheeting to avoid spread of construction dust, and proper handling, storage and disposal of chemical waste to avoid contamination of the existing water system, etc.	To minimize the indirect off-site impacts on the adjacent fishponds	Contractor	MPV	Construction phase	Implemented
S4.44	Implementation of good site practices during the construction phase: ▪ Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program; ▪ Silencers or mufflers on construction equipment should be utilized and properly maintained during the construction program; ▪ Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; ▪ Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby fishponds;	To minimize disturbance to fishponds by construction noise	Contractor	MPV	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
	▪ Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities; ▪ Use of movable barrier for certain powered mechanical equipment (PME); and ▪ Use of noise enclosure or acoustic shed to cover certain stationary PME.	To minimize disturbance to fishponds by construction noise	Contractor	MPV	Construction phase	Implemented
Pond Fisheries Impact (Post-construction Phase)						
S4.51	- Implementation of the groundwater monitoring and emergency response plan.	To detect and minimize hydrogeological impacts	Contractor	MPV	Post-Construction phase	Implemented
Marine Fisheries Impact (Construction Phase)						
Appendix 4.2 (S1.38)	- Mitigation measures to control water quality impacts proposed under Section 11 should be adopted.	To minimize the indirect impact on fisheries resources	Contractor	LKB and WKT	Construction phase	Implemented
Airborne Noise Impact (Construction Phase)						
S5.120	The following good site practices should be implemented: ▪ Only well-maintained plant should be operated on-site and plants should be serviced regularly during the construction program; ▪ Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program; ▪ Mobile plant, if any, should be sited as far from noise	To reduce construction noise impact	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S5.120	sensitive receivers (NSRs) as possible; ▪ Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; ▪ Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and ▪ Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	To reduce construction noise impact	MTR/Contractor	All works areas	Construction phase	Implemented
S5.121-S 5.122 and Table 5.22	The following quiet PME should be used: ▪ Pneumatic breaker (SWL=110dB(A)) ▪ Tracked Excavator Fitted with Hydraulic Breaker (SWL=110dB(A)) ▪ Truck Mixer (SWL=100dB(A)) ▪ Tracked Crane (SWL=101dB(A)) ▪ Dump Truck (SWL=103dB(A)) ▪ Tracked Excavator/Loader (SWL=105dB(A)) ▪ Dozer (SWL=111dB(A)) ▪ Road Roller (SWL=101dB(A))	To reduce construction noise impact	MTR / Contractor	Works Areas A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, Y, Z, AA, AC, AE, AF, AG and AH	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S5.123 - S5.124	Movable noise barrier should be used for the following PME where practicable: ▪ Mini backhoe ▪ Breaker, mini-robot mounted ▪ Vibratory poker ▪ Handheld breaker ▪ Excavator ▪ Grab ▪ Tracked Crane	To reduce construction noise impact	MTR / Contractor	Works Areas A, C and D	Construction phase	Implemented
S5.125	Noise enclosure/acoustic shed should be used for the following PME where practicable: ▪ Air compressor ▪ Concrete pump ▪ Grout pump ▪ Shotcrete pump	To reduce construction noise impact	MTR / Contractor	Works Areas A, B, C, D, E, F, G, H, I, J, K, L, M, O, P, Q, S, T, U, V and Z	Construction phase	Implemented
S5.125	Acoustic enclosure should be used for enclosing drilling jumbo as fully as possible.	To reduce construction noise impact	MTR / Contractor	Works Areas B, C, F, H and J	Construction phase	Implemented
S5.127	Silencer should be used for the ventilation fans.	To reduce construction noise impact	MTR / Contractor	Works Areas A, B, C, D, E, F, H, J, L and P	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S5.128	Noise insulating fabric should be applied where practicable to cover the following PME: ▪ Drill rig ▪ Grab and chisel ▪ Oscillator & casings ▪ Piling rig ▪ Piling, large diameter bored, reverse circulation drill ▪ Piling, vibrating hammer	To reduce construction noise impact	MTR / Contractor	Works Areas A, B, C, D, E, G, L, M, N, O, Q, R, S, V	Construction phase	Implemented
S5.130	Use of "Noise Insulating Cover" to cover the mucking out points.	To reduce construction noise impact	MTR / Contractor	Works Area L	Construction phase	Implemented
S5.131	Use of temporary hoardings along the works boundary.	To reduce construction noise impact	MTR / Contractor	Works Areas B and D	Construction phase	Implemented
S5.134-S 5.136	Use of saw instead of mini-robot mounted breaker and oscillator pile for removal of superstructures	To reduce construction noise impact	MTR / Contractor	Works Areas N, O and S	Construction phase	Implemented
S5.137	Scheduling of construction works outside school examination periods	To reduce construction noise impact	MTR / Contractor	Works Areas G, J, K, L, N, O, P, Q, Y, U, V and AH	Construction phase	Implemented
S5.193	Airborne construction noise monitoring should be conducted in accordance with EM&A Manual to monitor the airborne noise impact.	To monitor airborne noise impact	MTR / Contractor	Proposed monitoring locations	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Ground-borne Noise Impact (Construction Phase)						
S6.82	Ground-borne construction noise monitoring should be conducted in accordance with EM&A Manual to monitor the ground-borne noise impact.	To monitor ground-borne noise impact	MTR / Contractor	Proposed monitoring locations	Construction phase	Implemented
S6.85	Construction ground-borne noise measurement results should be used to further update the ground-borne noise prediction where appropriate.	To update the predicted ground-borne noise levels.	MTR / Contractor	TBM tunneling section	Construction phase	Implemented
S6.83	Conduct tests of the FDL of the train to update the ground-borne noise prediction and the recommended mitigation measures as necessary.	To confirm the predicted ground-borne noise levels	MTR	-	Prior to the final design of the trackform and the extent of each type of trackform, and after the proposed train in operation outside Hong Kong	Implemented
S6.84	Conduct vibration borehole testing at two carefully selected locations along the proposed tunnel alignment to determine the LSR values under certain geological conditions. The ground-borne noise predictions and the recommendation on mitigation measures should be updated as necessary.	To confirm the predicted ground-borne noise levels	MTR	Proposed two locations	Prior to the commencement of construction works	The measurement was completed and the Performance Test Plan has been approved by EPD

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Landscape and Visual Impact (Construction Phase)						
Table 7.10	All existing trees should be carefully protected during construction as far as possible in accordance with ETWB TCW No. 29/2004 and 3/2006.	To minimize landscape and visual impacts during construction phase	Contractor	Works areas	Detailed design and construction phases	Implemented
	Trees should be retained on site as far as possible. Should removal of trees be unavoidable due to construction impacts, trees will be transplanted or felled depending on stated criteria in the Tree Removal Applications to be submitted separately in accordance with ETWBC 2/2004 and 3/2006. Wood resulting from tree removal should be recycled as mulch or soil conditioner which could be used within the Project or in other projects as much as possible.					
	Control of night-time lighting glare.		Contractor			
	Erection of decorative screen hoarding to screen off undesirable views of the construction site having consideration of safety and security.		Contractor			
	Reuse of existing topsoil where possible for new planting areas within the project.		Contractor			

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Cultural Heritage Impact						
S8.100 – S8.103	• Conduct further investigation (a minimum of 18 trial pits, 1m x 1.5m) to confirm any archaeological remains exist in the inaccessible areas (**NOL/ERL/300/C/XRL/ENS/M55/303- 304 & 306-307**). If archaeological data collected from these 18 test pits is insufficient to ascertain the archaeological potential of the inaccessible areas, additional test pits should be conducted • Conduct rescue excavation to preserve archaeological remains by detailed records if found (**NOL/ERL/300/C/XRL/ENS/M55/307**)	To confirm any archaeological remains exist in the inaccessible areas and to preserve archaeological remains if any	MTR	Proposed rescue excavation area in SSS and other archaeological deposit areas identified in the further archaeological investigation	Prior to construction phase	Completed
S8.103	Conduct archaeological watching brief during construction works at TUW for identification of any historical finds during construction phase	To identify any historical finds in the works area	MTR	TUW	Construction phase	Implemented
S8.104	Conduct regular site audit during the construction of barging point to confirm that no excavation works is conducted at Lung Kwu Sheung Tan archaeological deposit area.	To avoid direct impact	MTR	LKST barging point and associated access road	Construction phase	Implemented
S8.105	Restriction of works boundary of TPP to be extended to relics discovered area outside TPP.	To avoid direct impact	MTR	TPP	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S8.107, S8.128	Avoid works areas at the sites of the identified built heritage structures as far as practicable. Identified earth shines within works boundary of SSS and TPP will be relocated by local villagers prior to commencement of construction works at SSS and TPP.	To avoid direct impact	MTR	Earth shines (NHL-04,TKP-02 and LET-07)	Prior to construction phase	Implemented
S8.109, S8.125	Vibration monitoring at Lai Chi Kok Hospital: ▪ Prior to commencement of construction works, the location and installation of the monitoring stations should be discussed and agreed with AMO, Hong Kong Institution for Promotion of Chinese Culture (the "NPO", selected organization for the Revitalisation Scheme), the Commissioner for Heritage's Office and relevant parties before installation. ▪ Compliance monitoring of vibration limits should be conducted and reported as a requirement of EM&A programme.	To monitor vibration impacts on the identified vibration sensitive historical buildings	MTR	Ex-Lai Chi Kok Hospital	Before construction phase; Construction phase	Implemented
S8.110, S8.126	▪ A further condition survey and appropriate consolidation works (e.g. installation of temporary propping or reinforced timber beam to maintain the stability of structure etc.), if required, will be carried out on Blocks P Q, W and the inaccessible area of LCKH prior to construction. It should be discussed and agreed in advance with AMO, NPO, and the Commissioner for Heritage's Office and relevant parties.	To minimize vibration impacts on the identified vibration sensitive historical buildings	MTR	Ex-Lai Chi Kok Hospital	Detailed design	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S8.112, S8.127	▪ If consent is given by the property owner, a condition survey will be carried out at Cheung Yuen prior to the commencement of works in SSS. The survey should be discussed and agreed in advance with AMO and property owner prior to commencement of survey.	To minimize vibration impacts on the identified vibration sensitive historical buildings	MTR	Cheung Yuen	Prior to construction phase	AMO's comment has been sought during formulation of Vibration Monitoring Plan
S8.112, S8.127	▪ If consent is given by the property owner, vibration monitoring at LET-06 (Cheung Yuen) will be conducted when excavation works are being conducted within 50m radius from the house. The monitoring location should be discussed and agreed with AMO and property owner before installation.	To monitor vibration impacts on the identified vibration sensitive historical buildings	MTR	Cheung Yuen	Construction phase	Implemented
S8.113, S8.124	▪ Control of vibration levels from the proposed blasting and excavation activities within a peak particle velocity (ppv) limit of 25mm/s to prevent potential vibration impact to all identified built heritage resources.	To minimize vibration impacts on the identified vibration sensitive historical buildings	MTR	All works area where blasting and excavation activities are involved	Construction phase	Implemented
S8.114 - S8.115	▪ Use of sensibly designed screen hoardings for reducing the potential visual impact.	To minimize visual impacts	MTR	All identified heritage buildings in all works areas	Detailed design and construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Land Contamination Impact						
S9.28 – S9.33	Remediation of Contaminated Soil ▪ After excavation, confirmation sampling and testing shall be conducted from the sidewalls and at base of the excavations to ensure complete excavation of contaminated soils. ▪ Bioremediation (biopiling) / ex-situ chemical oxidation are proposed to remediate the contaminated soil recorded in Sites H and Q. Remediation Report(s) (RR) for contaminated works area(s) should be prepared by the Land Contamination Specialist to detail the remediation process and demonstrate that contaminated soils are all removed, properly handled and disposal of. The remediated soil should be reused on site to minimize the waste disposal.	To remediate contaminated soil	Contractor	Sites H and Q	Site remediation	For Sites H: Implemented (remediation has been conducting according to the approved RAP [Supplementary]) For Site Q: Implemented
S9.35(i)	For construction works of the alignment close to Ngau Tam Mei Landfill ▪ As a general precautionary measure, visual inspection of excavated materials should be conducted to screen soil for signs of contamination (e.g. discoloration, stains and odour). The	Acting as a general precautionary measure to screen soil for signs of contamination during tunnel boring works under/close to Ngau Tam Mei Landfill	MTR/Contractor	Within the Landfill Boundary where signs of contamination is identified	During Tunnel Boring within Ngau Tam Mei Landfill Boundary Section	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S9.35(i)	inspection process should also be assisted by a photo ionization detector (PID) for volatile organics. If suspected materials are encountered during tunnel boring, sampling and testing for the parameters recommended in Table 6.1 of CAP should be undertaken to verify any contamination. The suspected soil bored out during excavation and tunnel boring should be temporary stockpiled and if laboratory analysis indicated exceedance of relevant RBRG levels, remediation works, should be undertaken depending on the quantity and quality of contaminated soil identified.	Acting as a general precautionary measure to screen soil for signs of contamination during tunnel boring works under/close to Ngau Tam Mei Landfill	MTR/Contractor	Within the Landfill Boundary where signs of contamination is identified	During Tunnel Boring within Ngau Tam Mei Landfill Boundary Section	Implemented
S9.35(ii)	For construction works at CLP transformer station at Lai Cheung Road and Petrol Filling Station at 82 Tai Kok Tsui Road ▪ As a general precautionary measure, visual inspection of excavated materials should be conducted to screen soil for signs of contamination (e.g. discoloration, stains and odour). The inspection process should also be assisted by a photo ionization detector (PID) for volatile organics. If suspected materials are encountered during tunnel boring, further sampling and testing should also be	Acting as a general precautionary measure to screen soil for signs of contamination during tunnel boring/ excavation at CLP transformer station at Lai Cheung Road and Petrol Filling Station at 82 Tai Kok Tsui Road	MTR/Contractor	Area close to CLP transformer station at Lai Cheung Road and Petrol Filling Station at 82 Tai Kok Tsui Road where signs of contamination is identified	During Tunnel Boring/ excavation works near CLP transformer station at Lai Cheung Road and Petrol Filling Station at 82 Tai Kok Tsui Road	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S9.35(ii)	undertaken to verify any contamination. The soil bored out during excavation and tunnel boring should be temporary stockpiled and if laboratory analysis indicated exceedance of relevant RBRG levels, remediation works, should be undertaken depending on the quantity and quality of contaminated soil identified.	Acting as a general precautionary measure to screen soil for signs of contamination during tunnel boring/ excavation at CLP transformer station at Lai Cheung Road and Petrol Filling Station at 82 Tai Kok Tsui Road	MTR/Contractor	Area close to CLP transformer station at Lai Cheung Road and Petrol Filling Station at 82 Tai Kok Tsui Road where signs of contamination is identified	During Tunnel Boring/ excavation works near CLP transformer station at Lai Cheung Road and Petrol Filling Station at 82 Tai Kok Tsui Road	Implemented
S9.35 (iii)	For sites with contamination identified (Site H and Site Q) the following environmental mitigation measures should be undertaken during the course of the site remediation: ▪ Excavation profiles must be properly designed and executed with attention to the relevant requirements for environment, health and safety; ▪ Excavation should be carried out during dry season as far as possible to minimize contaminated runoff from contaminated soils; ▪ Supply of suitable clean backfill material is needed	To minimize the potentially adverse environmental impacts arising from the handling of potentially contaminated materials.	Contractor	Sites H and Q /during transportation	Site remediation and prior to construction phase	For Site H and Q: Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S9.35 (iii)	after excavation; ▪ The chemical oxidant proposed (RegenOxTM) as a contaminant mass reduction technology. Comprises a solid oxidant complex (sodium percarbonate/catalytic formulation) and an activator complex (a composition of ferrous salt embedded in a micro-scale catalyst gel). These chemical will be securely stored, separately and way from sources of ignition or oxidizable items. Handling will & will be undertaken by persons specifically trained and wearing appropriate PPE. ▪ Vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates should be sealed to prevent any discharge during transport or during wet conditions; ▪ Speed control for the trucks carrying contaminated materials should be enforced; and ▪ Vehicle wheel and body washing facilities at the site's exist points should be established and used.	To minimize the potentially adverse environmental impacts arising from the handling of potentially contaminated materials.	Contractor	Sites H and Q / during transportation	Site remediation and prior to construction phase	For Site H and Q: Implemented
S9.35(iv)	In order to minimize the potentially adverse effects on health and safety of construction workers during the course	To minimize the potentially adverse effects on health and	Contractor	Sites H and Q	Site remediation and prior to	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S9.35(iv)	of site remediation, the Occupation Safety and Health Ordinance (OSHO) (Chapter 509) and its subsidiary Regulations should be followed by all site personnel working on the site at all times. In addition, the following basic health and safety measures should be implemented as far as possible: ▪ Set up a list of safety measures for site workers; ▪ Provide written information and training on safety for site workers; ▪ Keep a log-book and plan showing the contaminated zones and clean zones; ▪ Maintain a hygienic working environment; ▪ Avoid dust generation; ▪ Provide face and respiratory protection gear to site workers; ▪ Provide personal protective clothing (e.g. chemical resistant jackboot, liquid tight gloves) to site workers; and ▪ Provide first aid training and materials to site workers.	safety of construction workers during the course of site remediation	Contractor	Sites H and Q	construction phase Site remediation and prior to construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S9.35(v)	For Areas Feasible or Infeasible for On-Site Inspection and Site Investigation (i) Phase 2 supplementary SI works ▪ Upon site access is granted, site inspection should be carried out to ascertain any contaminative sources and hotspot of contamination within the site. ▪ The sampling and testing schedule as recommended in the approved CAP should then be updated based on respective site situation and the number of sampling locations may be significantly reduced. A revised CAP should then be submitted to EPD for endorsement. ▪ For supplementary CARs and RAP(s), upon completion of SI and laboratory testing, supplementary CARs should be submitted to EPD for endorsement. If contamination is identified, RAP(s) should also be submitted to EPD for endorsement. ▪ The revised CAPs and supplementary CARs and /or RAP(s) should be submitted in separate packages for different works area depending on the schedule of land resumption and the commencement of construction works for each works area. ▪ RR(s) should be submitted to demonstrate	(i) To identify areas with land contamination concern, report laboratory results and propose remediation measures if necessary. (ii) To ensure remediation works have been undertaken to before the commencement of any construction works of the Project that may disturb the ground of the south-western portion of the MPV.	MTR/ Contractor	Areas Infeasible for On-Site Inspection and Site Investigation and WSW	After land resumption and prior to the construction works commencement at respective sites	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S9.35(v)	completion of remediation works before construction work starts at the site. (ii) WSW ▪ According to WSW EP Condition 3.14, the Project Proponent of the WSW development shall prepare and submit CAR/RAP to EPD within 2 months after commencement of construction of the WSW development and the recommendations in the endorsed CAR/RAP shall be fully implemented before the commencement of any construction works that may disturb the ground of the relevant sites. ▪ This project will ensure that the completion of remediation works before the construction works at contaminated areas start.	(i) To identify areas with land contamination concern, report laboratory results and propose remediation measures if necessary. (ii) To ensure remediation works have been undertaken to before the commencement of any construction works of the Project that may disturb the ground of the south-western portion of the MPV.	MTR/ Contractor	Areas Infeasible for On-Site Inspection and Site Investigation and WSW	After land resumption and prior to the construction works commencement at respective sites	Implemented
Waste Management Implications (Construction Phase)						
S10.107	Recommendations for good site practices: ▪ Prepare a Waste Management Plan approved by the Engineer/Supervising Officer of the Project based on current practices on construction sites; ▪ Training of site personnel in, site cleanliness, proper waste management and chemical handling procedures;	To implement good site practice for handling, sorting reuse and recycling of C&D materials	Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.107	▪ Provision of sufficient waste disposal points and regular collection of waste; ▪ Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; ▪ Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and ▪ Separation of chemical wastes for special handling and appropriate treatment.	To implement good site practice for handling, sorting reuse and recycling of C&D materials	Contractor	All works area	Construction phase	Implemented
S10.108	Recommendations for waste reduction measures: ▪ Sorting of demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (i.e. soil, broken concrete, metal etc.); ▪ Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; ▪ Encourage collection of aluminium cans by providing separate labelled bins to enable this waste	To implement on-site sorting facilitating reuse and recycling of materials as well as proper disposal of waste	Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.108	to be segregated from other general refuse generated by the workforce; ▪ Proper storage and site practices to minimize the potential for damage or contamination of construction materials; ▪ Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste; and ▪ Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle.	To implement on-site sorting facilitating reuse and recycling of materials as well as proper disposal of waste	Contractor	All works areas	Construction phase	Implemented
S10.109	The Contractor should prepare and implement a Waste Management Plan (WMP) as a part of the Environmental Management Plan (EMP) in accordance with ETWB TCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities.	To keep trace of the generation, minimization, reuse and disposal of C&D materials in the Project	Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.112	Storage of materials on site may induce adverse environmental impacts if not properly managed, recommendations to minimize the impacts include: ▪ Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimising the potential of pollution; ▪ Maintain and clean storage areas routinely; ▪ Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and ▪ Different locations should be designated to stockpile each material to enhance reuse.	To minimize potential impacts of waste storage and enhance reusable volume	Contractor	All works areas	Construction phase	Implemented
S10.113	Waste hauliers must hold a valid permit for the collection of waste as stipulated in their permits. Removal of waste should be done in a timely manner.	To collect and remove waste generated	Contractor	All works areas	Construction phase	Implemented
S10.114-115	- Implementation of trip-ticket system to monitor waste disposal and control fly-tipping. - Set up warning signs at vehicular access points reminding drivers of designated disposal sites and penalties of an offence. - Installation of close-circuited television at access	To monitor disposal of waste and control fly-tipping	Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.114-115	points of vehicles to monitor and prevent illegal dumping.	To monitor disposal of waste and control fly-tipping	Contractor	All works areas	Construction phase	Implemented
S10.117	Recommendations for excavated materials within works areas: ▪ Several ramps should be used for transportation of different materials as far as practicable (at SSS/ERS site, both soft and hard materials could be generated with the provision of three ramps; each of them can be used for single material for primary separation). Each ramp should be used for transportation of a single material as far as practicable. ▪ If a conveyor system is used, materials should be transported separately on the belts, it is therefore proposed that more than one conveyor belt should be installed if possible. If more than one material is needed to be transported on a single belt, each material should be stockpiled separately once they are removed from the excavation face to the ground and the belt should operate at different times with different materials as far as practicable. ▪ Enclosure should also be provided for the conveyor	To mitigate and minimize the potential impacts from the storage and transportation of materials within works areas	Contractor	All works areas	Construction Phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.117	belt, as far as practicable to minimize the of dust generation. ▪ Different locations should be designated for each material during stockpiling. Stockpiling may be needed when the conveyor system is under constraint or when the spoil could not be transported away from works area immediately after excavation. Cover should be provided to dusty stockpiles to avoid the materials from being wind-blown or flushed away by water. It is expected that water spraying system should also be equipped to moisten the materials.	To mitigate and minimize the potential impacts from the storage and transportation of materials within works areas	Contractor	All works areas	Construction phase	Implemented
S10.119	Wet spoil generated from TBM construction, construction of bored piles and D-wall should be properly handled before disposal to Taishan and Fill Banks respectively for reuse in other projects. Dry materials should be mixed with the wet spoil or by the use of lime to reduce water content where applicable.	To minimize impacts to disposal outlet from reception of wet spoil	Contractor	All works areas	Construction phase	Implemented
S10.120	Wheelwash facilities should be provided before the trucks leave the works area.	To minimize dust impact	Contractor	All works areas	Construction phase	Implemented
S10.121	- The Contractor should ensure the on-site separation from inert portion. - The waste delivered to landfill should not contain any free water or have water content more than 70% by	To meet the requirement for disposal at landfill	Contractor and Waste haulier	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.121	weight. - The haulier must ensure suitable amount of waste would be loaded on different types of trucks used. - A one-week notice should be given to EPD with information on Contractor's name and respective contact details.	To meet the requirement for disposal at landfill	Contractor and Waste haulier	All works areas	Construction phase	Implemented
S10.125	This will generally follow the PNAP 25 in handling of dredged/excavated sediment. The dredged / excavated sediments would be loaded onto barges and transported to existing designated disposal sites allocated by the MFC according to their levels of contamination, as presented below: ▪ For Type 1 sediment, the sediments will be excavated/ dredged and transport to designated CEDD Facilities, typically at South Cheung Chau and/or Ninepin. ▪ For Type 2 sediment, the sediments will be dredged/ excavated and transport to designate CEDD Facilities, typically at East Sha Chau for confined marine disposal. ▪ For Type 3 sediment, it would require special treatment/disposal before confined marine disposal at CEDD Facilities, typically at East Sha Chau. In order to have the least potential of loss of	To dispose sediment in an authorized and least impacted way	Contractor	All works areas with sediments concern	Detailed Design and Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.125	contaminants to the marine environment, containment of the sediments in geosynthetic containers is proposed when transporting the sediment. Field trials are recommended to be undertaken during the detailed design stage to establish the optimum handling method for this approach. The details of the disposal methodology could therefore be confirmed during the detailed design stage, prior to construction.	To dispose sediment in an authorized and least impacted way	Contractor	All works areas with sediments concern	Detailed Design and Construction phase	Implemented
S10.126	The basic requirements and procedures for dredged / excavated sediment disposal specified under PNAP 252 shall be followed.	To dispose sediment in an authorized and least impacted way	Contractor	All works areas with sediments concern	Construction phase	Implemented
S10.127	The Project Proponent will agree in advance with MFC of CEDD on the site allocation by submitting a Construction & Demolition Material Management Plan. The final disposal sites and arrangement will be determined by the MFC and a dumping permit will be obtained from the DEP prior to the commencement of the dredging and excavation works.	To determine the best handling and disposal option of the sediments.	MTR/ Contractor	All works areas with sediments concern	Detailed Design and Construction phase	Implemented
S10.128	The contractor for the dredging/ excavation works shall apply for the site allocations of marine sediment disposal based on the prior agreement with MFC/CEDD. The	To dispose the sediments in an authorized way.	Contractor	All works areas with sediments	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
	contractor shall apply for all necessary permits from relevant authorities for the disposal of dredged / excavated sediment.			concern		
S10.129	If temporary stockpiling of sediments is necessary, the sediment should be covered by tarpaulin and earth bunds or sand bag barriers should be provided on site to prevent leachate from entering the drains and surrounding water bodies. The stockpiling areas should be completely paved or covered by lining avoiding contaminating the soil or groundwater underneath.	To prevent the cross contamination of surrounding soils and water bodies	Contractor	All works areas with sediments concern	Construction phase	Implemented
S10.130	The dredged / excavated sediment should be transported by covering trucks to designated barging points. The barge transporting the sediments to the designated disposal site should be equipped with tight fitting seals to prevent leakage. Besides, the barge should not be filled to a level that would cause overflow of materials or laden water during loading or transportation.	To prevent overflowing of sediments to the surrounding area and water bodies	Contractor	All works areas with sediments concern / trucks / barges	Construction phase	Implemented
S10.131	Loading of the dredged / excavated sediment to the barge should be controlled to avoid splashing and overflowing of the sediment slurry to the surrounding water.	To prevent overflowing of sediments to the surrounding area and water bodies	Contractor	Barging points	Construction phase	Implemented
S10.132	In order to minimize the potential odour emissions during the dredging / excavation operation and transportation of the sediment, the dredged / excavated sediment placed on	To minimize dust and odor impacts to surrounding environment	Contractor	All works areas with sediments	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
	barges should be properly covered as far as practicable. Requirement of the *Air Pollution Ordinance (Construction Dust) Regulation*, where relevant, should be adhered to during the construction phase of the Project.			concern / Barging points		
S10.134	Workers should wear protective gloves when carrying out the dredging / excavation works. Adequate washing and cleaning facilities should be provided on site.	To minimize the exposure to the contaminated sediments	Contractor	All works areas with sediments concern	Construction phase	Implemented
S10.135	For allocation of sediment disposal site and application of marine dumping permit, another proposal for sampling and chemical testing of the sediment will be prepared and submitted to the EPD for approval following the procedures in PNAP 252. The approved detailed sampling and chemical testing will be carried out prior to the commencement of the dredging/excavation activities to confirm the sediment disposal method. The contamination levels of the marine sediment to be dredged / excavated have to be analysed and recorded. After carrying out the sampling and testing, a Sediment Quality Report (SQR) will be prepared for EPD approval as required under the *Dumping at Sea Ordinance* to agree and confirm the quantities and extent of the contamination of the sediments prior to the dredging/ construction contract being tendered.	To analyze the sediments quality and determine the best disposal option	Contractor	All works areas with sediments concern	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.135	The SQR will include the sampling details, the chemical testing results, quality control records, proposed classification and delineation of sediment according to the requirements of the Appendix A of PNAP 252.	To analyze the sediments quality and determine the best disposal option	Contractor	All works areas with sediments concern	Construction phase	Implemented
S10.136	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. Containers used for storage of chemical waste should : ▪ Be compatible with the chemical wastes being stored, maintained in good condition and securely sealed; ▪ Have a capacity of less than 450 litres unless the specifications have been approved by EPD; and ▪ Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the *Waste Disposal (Chemical Waste) (General) Regulation*.	To properly store the chemical waste within works areas	Contractor	All works areas	Construction phase	Implemented
S10.137	The chemical storage areas should: ▪ Be clearly labelled to indicate corresponding chemical characteristics of the chemical waste and used for storage of chemical waste only; ▪ Be enclosed on at least 3 sides;	To prepare appropriate storage areas for chemical waste at works areas	Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.137	▪ Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; ▪ Have adequate ventilation; ▪ Be covered to prevent rainfall from entering; and ▪ Be properly arranged so that incompatible materials are adequately separated.	To prepare appropriate storage areas for chemical waste at works areas	Contractor	All works areas	Construction phase	Implemented
S10.138	Lubricants, waste oils and other chemical wastes would be generated during the maintenance of vehicles and mechanical equipments. Used lubricants should be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place.	To clearly label the chemical waste at works areas	Contractor	All works areas	Construction phase	Implemented
S10.139	A trip-ticket system should be operated in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation* to monitor all movements of chemical waste. The Contractor should employ a licensed collector to transport and dispose of the chemical wastes, to either the approved CWTC at Tsing Yi, or another licensed facility, in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*.	To monitor the generation, reuse and disposal of chemical waste	Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.140	General refuse should be stored in enclosed bins or compaction units separate from C&D materials and chemical waste. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D materials and chemical wastes.	To properly store and separate from other C&D materials for subsequent collection and disposal	Contractor	All works areas	Construction phase	Implemented
S10.141	The recyclable component of general refuse, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	To facilitate recycling of recyclable portions of refuse	Contractor	All works areas	Construction phase	Implemented
S10.142	The Contractor should carry out a training programme for workers in avoiding, reducing, reusing and recycling of materials generation. Posters and leaflets advising on the use of the bins should also be provided in the sites as reminders.	To raise workers' awareness on recycling issue	Contractor	All works areas	Construction phase	Implemented
Water Quality Impact (Construction Phase)						
S11.128 - S11.153	Construction site run-off and general construction activities: ▪ The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	To control water quality impact from construction site runoff and general construction activities	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.154	Groundwater seepages from uncontaminated area: ▪ In case seepage of uncontaminated groundwater occurs, groundwater should be pumped out from the works areas and discharged into the storm system via silt removal facilities. Uncontaminated groundwater from dewatering process should also be discharged into the storm system via silt traps.	To control water quality impact from groundwater from uncontaminated area	MTR / Contractor	All works areas	Construction phase	Implemented
S11.155	As the proposed WKT is near the Victoria Harbour, high ground water level regime due to both tidal effects and rainwater infiltration is anticipated. A cofferdam wall should be built to limit groundwater inflow to the excavation works areas in the WKT site.	To control water quality impact from groundwater from uncontaminated area	MTR / Contractor	WKT	Construction phase	Implemented
S11.156	To monitor the tide and groundwater relationship, it is recommended to install groundwater level loggers at the nearest tidal areas (i.e. near Mai Po).	To monitor the groundwater level	MTR / Contractor	Mai Po	Construction phase	Implemented
S11.157 - S11.158	Site Runoff or Groundwater from contaminated areas: ▪ No directly discharge of groundwater from contaminated areas should be adopted. ▪ Prior to any excavation works within the potentially contaminated areas, the baseline groundwater quality in the areas should be reviewed based on the past	To control water quality impact from contaminated groundwater	MTR / Contractor	Excavation areas where contaminated groundwater is found	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.157 - S11.158	relevant site investigation data and any additional groundwater quality measurements to be performed with reference to *Guidance Note for Contaminated Land Assessment and Remediation* and the review results should be submitted to EPD for examination. If the review results indicated that the groundwater to be generated from the excavation works would be contaminated, this contaminated groundwater should be either properly treated or properly recharged into the ground in compliance with the requirements of the TM-DSS. ▪ If wastewater treatment is to be deployed for treating the contaminated groundwater, the wastewater treatment unit shall deploy suitable treatment processes (e.g. oil interceptor / activated carbon) to reduce the pollution level to an acceptable standard and remove any prohibited substances (such as TPH) to an undetectable range. ▪ All treated effluent from the wastewater treatment plant shall meet the requirements as stated in TM-DSS and should be either discharged into the foul sewers or tankered away for proper disposal.	To control water quality impact from contaminated groundwater	MTR / Contractor	Excavation areas where contaminated groundwater is found	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.157 - S11.158	▪ If deployment of wastewater treatment is not feasible for handling the contaminated groundwater, groundwater 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 section 2.3 of the TM-DSS. The baseline groundwater quality should be determined prior to the selection of the recharge wells, and submit a working plan to EPD for agreement. Pollution levels of groundwater to be recharged shall not be higher than pollutant levels of ambient groundwater at the recharge well. Groundwater monitoring wells should be installed near the recharge points to monitor the effectiveness of the recharge wells and to ensure that no likelihood of increase of groundwater level and transfer of pollutants beyond the site boundary. Prior to recharge, free products should be removed as necessary by installing the petrol interceptor. The Contractor should apply for a discharge licence under the WPCO through the Regional Office of EPD for groundwater recharge operation or discharge of treated groundwater.	To control water quality impact from contaminated groundwater	MTR / Contractor	Excavation areas where contaminated groundwater is found	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.128 - S11.136, S11.160	Barging points: Mitigation measures for control water quality impact from surface run-off should be applied. The following good site practices should also be adopted: ▪ all vessels should be sized so that adequate clearance is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash ▪ all hopper barges should be fitted with tight fitting seals to their bottom openings to prevent leakage of material ▪ construction activities should not cause foam, oil, grease, scum, litter or other objectionable matter to be present on the water within the site ▪ loading of barges and hoppers should be controlled to prevent splashing of material into the surrounding water. Barges or hoppers should not be filled to a level that will cause the overflow of materials or polluted water during loading or transportation	To control water quality impact from barging point	MTR / Contractor	All Barging Points	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.161	Effluent discharge: There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality should meet the requirements specified in the discharge licence. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing seawater intakes. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD.	To control water quality impact from effluent discharge from construction site	MTR / Contractor	All works areas	Construction phase	Implemented
S11.162	Accidental spillage of chemicals: Contractor should register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	To control water quality impact from accidental chemical spillage	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.163	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	To control water quality impact from accidental chemical spillage	MTR / Contractor	All works areas	Construction phase	Implemented
S11.164	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: ▪ Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. ▪ Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. ▪ Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	To control water quality impact from accidental chemical spillage	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.165	Surface construction works at or in close proximity of watercourses or seafront: ▪ The proposed surface construction works should be carried out in dry season as far as practicable where the flow in the river channel or stream is low. ▪ The use of less or smaller construction plants may be specified to reduce the disturbance to the riverbed or pond deposits. ▪ Temporary sewerage system should be designed to prevent wastewater from entering the river, streams and sea. ▪ Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. ▪ Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. ▪ Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being	To control water quality impact from construction works at or in close proximity of watercourses or seafront	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.165	washed into the nearby water receivers. ▪ Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. ▪ Mitigation measures to control site run-off from entering the nearby water environment should be implemented to minimize water quality impacts. Surface channels should be provided along the edge of the waterfront within the work sites to intercept the run-off. ▪ Construction effluent, site run-off and sewage should be properly collected and/or treated. ▪ Any works site inside the water courses should be temporarily isolated. The water flow should be temporarily diverted to downstream by using PVC pipes, steel arrays in concrete case or similar, restricting the excavation works to be conducted within an enclosed dry section of the channel. This works arrangement would provide a dry zone for excavation works within the river channel and would prevent the conveyance of suspended sediment downstream. Dewatering at works section should	To control water quality impact from construction works at or in close proximity of watercourses or seafront	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.165	be conducted prior to the commencement of works. Further limiting or reducing the works area inside the water courses should be considered during wet season or rainstorm event in order to reduce the area of exposed surface. ▪ Silt curtain should be installed around the construction activities at or near the watercourses to minimize the potential impacts due to accidental spillage of construction wastes and excavated materials. ▪ Proper shoring may need to be erected in order to prevent soil or mud from slipping into the watercourses. ▪ Supervisory staff should be assigned to station on site to closely supervise and monitor the works.	To control water quality impact from construction works at or in close proximity of watercourses or seafront	MTR / Contractor	All works areas	Construction phase	Implemented
S11.166	Surface construction works close to water gathering grounds: ▪ The conditions as specified in WSD guidelines on protection of Water Gathering Ground should be followed or observed where practicable	To control water quality impact from surface construction works close to Water Gathering Ground	MTR / Contractor	Works areas close to water gathering ground	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.167	Dredging of marine sediments at LKST: ▪ Closed grab dredger should be used to minimize the loss of sediment during the raising of the loaded grabs through the water column. ▪ No more than one closed grab dredger should be operated at any one time. ▪ Double silt curtains should be deployed around the dredging operations as far as practicable. ▪ The descent speed of grabs should be controlled to minimize the seabed impact speed. ▪ Barges should be loaded carefully to avoid splashing of material. ▪ All barges used for the transport of dredged materials should be fitted with tight bottom seals in order to prevent leakage of material during loading and transport. ▪ All barges should be filled to a level which ensures that material does not spill over during loading and transport to the disposal site and that adequate freeboard is maintained to ensure that the decks are not washed by wave action.	To minimize the loss of fine sediment to suspension during dredging of marine sediments at LKST	MTR / Contractor	Marine dredging at LKST	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.83 and S11.165	Diversion of watercourse: ▪ The excavation works at the existing stream in Shek Kong/ Kam Tin Nullah should be carried out by approved methods by the Engineer to minimize erosion. Should excavation works be carried out at the designated section of water course, temporary river diversion should be conducted prior to the commencement of works to avoid water flowing into works area. The temporary diversion of water flow should be performed by appropriate means, such as completing the construction of the proposed channel section for carrying diverted flow prior to excavation works, or other similar methods, as approved by the Engineer to suit the works condition. This works arrangement would provide a dry zone for excavation works within the river channel and would prevent the conveyance of suspended sediment downstream. Dewatering at works section should also be conducted prior to the commencement of works. ▪ Mitigation measures for minimizing the water quality impact for surface construction works at or close to the watercourses should also be applied.	To control water quality impact due to diversion of watercourse	MTR / Contractor	Watercourse to be diverted in Shek Kong	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S. 11.169 - 11.173	Hydrogeological Impact: For the cut and cover tunnels and associated excavations for vent buildings and emergency access/escape points, the following measures should be in place in order to mitigate any drawdown effects to the groundwater table during the operation of the temporary dewatering works: ▪ Toe grouting should be applied beneath the toe level of the temporary/permanent cofferdam walls as necessary to lengthen the effective flow path of groundwater from outside and thus control the amount of water inflow to the excavation. ▪ Recharge wells should be installed as necessary outside the excavation areas. Water pumped from the excavation areas should be recharge back into the ground. The bored tunnels should be constructed using a closed face tunnel boring machine to limit water inflow into the excavation face. The cutter head for the machine will be sealed during excavation and therefore the water inflow from the face will be very small. Precast undrained linings should be installed and back grouted behind the	To control groundwater hydrogeological impact and groundwater drawdown	MTR/ Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S. 11.169 - 11.173	tunnel boring machine as it advances along the alignment to minimize the potential inflow of water behind the cutter head. The Contractor should initially adopt suitable water control strategies while undertaking the excavation works. The water control strategies are shown as follow: ▪ Probing Ahead: As normal practice, the Contractor will undertake rigorous probing of the ground ahead of tunnel excavation works to identify zones of significant water inflow. The probe drilling results will be evaluated to determine specific grouting requirements in line with the tunnel advance. In such zones of significant water inflow that could occur as a result of discrete, permeable features, the intent would be to reduce overall inflow by means of cut-off grouting executed ahead of the tunnel advance. ▪ Pre-grouting: Where water inflow quantities are excessive, pre-grouting will be required to reduce the water inflow into the tunnel. The pre-grouting will be achieved via a systematic and carefully specified protocol of grouting.	To control groundwater hydrogeological impact and groundwater drawdown	MTR/ Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S. 11.169 - 11.173	▪ In principle, the grout pre-treatment would be designed on the basis of probe hole drilling ahead of the tunnel face. In the event of excessive drawdown being observed within the ground water table as a result of the tunnelling works even after incorporation of the water control strategies, post-grouting will be applied as described below: ▪ Post-grouting: Groundwater drawdown will be most likely due to inflows of water into the tunnel that have not been sufficiently controlled by the pre-grouting measures. Where this occurs post grouting will be undertaken before the lining is cast. Whilst unlikely to be required in significant measure, such a contingency should be allowed for reduction in permeability of the tunnel surround (by grouting) to limit inflow to acceptable levels. A detailed groundwater monitoring programme should be developed in detailed design stage to monitor both the proposed works and the impact of those works on the adjacent area.	To control groundwater hydrogeological impact and groundwater drawdown	MTR/ Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Air Quality (Construction Phase)						
S 12.78	For concrete batching plant, the requirements and mitigation measures stipulated in the *Guidance Note on the Best Practicable Means for Cement Works (Concrete Batching Plant) BPM 3/2(93)* should be followed and implemented.	To minimize dust impacts	MTR / Contractor	Concrete batching plant at works area V	Construction phase	Implemented
Table 12.9 and Table 12.12	The design emission concentration of dust collector for different types of silos for concrete batching plant should be: ▪ Dust collector for each small Cement Silo ≤ 30 mg/m^3 ▪ Dust collector for each Large Capacity Cement Silo ≤ 50mg/m^3 ▪ Dust collector for each PFA Silo ≤ 30 mg/m^3 ▪ Dust collector for each Mixer ≤ 40 mg/m3 During operation of concrete batching plant: ▪ The aggregates should be unloaded from the tipper trucks to the receiving hopper equipped with enclosures on 3 sides and top cover, and water spraying system. ▪ The cement and PFA should be directly loaded into the silo via a flexible duct. Dust collectors should	To minimize dust impacts	MTR / Contractor	Concrete batching plant at works area V	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Table 12.9 and Table 12.12	be installed at the cement/PFA silo based on the above design emission rates. ▪ The aggregates should be stored in fully enclosed overhead storage bins. The top of overhead storage bins should be covered with cladding. Water spraying system should be installed at the top of storage bins for watering the aggregates, and aggregate storage bins should be fully enclosed. ▪ The whole process of weighing and mixing of cementitious material should be performed in a fully enclosed environment. The mixers shall equip with the dust collectors based on the above design emission rates. ▪ The concrete should be directly loaded from the mixer into the transit mixer of a truck in "wet" form. ▪ Haul road within the site should be paved. Wheel washing pit should be installed at the gate of the concrete batching plant. Water spraying system should be installed along the haul road.	To minimize dust impacts	MTR / Contractor	Concrete batching plant at works area V	Construction phase	Implemented
Table 12.10	(1) Cut & Cover Areas and Stockpiles in the vicinity of adits/shafts: (a) Heavy construction activities at Cut & Cover Areas,	To minimize dust impacts	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Table 12.10	Storage of materials at Stockpiles - Active areas for heavy construction activities, loading & unloading materials at stockpiles ▪ The specified requirements for cut & cover areas and stockpiles at Shek Kong, Nam Cheong and West Kowloon works areas are as follows: (i) Shek Kong works area – active area minimized to 15% of total area, watering with complete coverage of active area ten times a day. (ii) Nam Cheong works area – active area minimized to 30% of total area, watering with complete coverage of active stockpile area four times a day. (iii) West Kowloon works area – active area minimized to 15% of total area, watering with complete coverage of active area eight times a day. ▪ For other sites, the active area would be minimized to 30% of the total area, water spraying system would be applied on the active area and watering with complete coverage of active area four times a day would be required. ▪ The remaining inactive area would be well covered with impervious sheeting at all work sites. (b) Trucks - Transportation of materials	To minimize dust impacts	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Table 12.10	▪ Wheel wash facilities provided at the site exit. The vehicles should be washed before leaving the stockpiles. The spoils should also be well covered before leaving the site in order to minimize generation of dusty materials. ▪ The haul roads within the site should be paved and water spraying would be provided to keep the wet condition. ▪ For the Shek Kong works area, watering paved haul roads once per hour would be provided. (2) Temporary stockpiles within barging facilities: (a) Loading point - Loading of spoils from trucks onto stockpile ▪ Water spraying should be provided at the loading points to suppress the dust impact. (b) Storage of materials - Active area for loading & unloading materials ▪ Water spraying system should be applied on the active area and watering with complete coverage of active area four times a day is required.	To minimize dust impact	MTR / Contractor	All works areas	Construction phase	Implemented
Table 12.11	Barging facilities: (1) Haul road within barging facilities - Transportation of spoils to the barging points	To minimize dust impacts	MTR / Contractor	All barging points	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Table 12.11	▪ All road surfaces within the barging facilities should be paved and water spraying should be provided to keep the wet condition. For paved haul roads at West Kowloon and Nam Cheong, watering haul road once per hour is required. (2) Unloading of materials - Unloading of spoil materials ▪ The unloading process should be undertaken within enclosed tipping hall. Water spraying and dust curtain should be provided at the discharge point for dust suppression. (3) Trucks - Vehicles leaving the barging facilities ▪ Vehicle wheel washing facilities should be provided at site exit. (4) Transportation of spoils to one of the Nam Cheong Barging Point ▪ Fully enclosed conveyor system should be adopted for transportation of spoils from shaft to the barging point.	To minimize dust impacts	MTR / Contractor	All barging points	Construction phase	Implemented
S12.78	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: ▪ Use of regular watering, with complete coverage, to	To minimize dust impacts	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S12.78	reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. ▪ Use of frequent watering for particularly dusty construction areas and areas close to ASRs. ▪ Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines. ▪ Open stockpiles should be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. ▪ Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. ▪ Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. ▪ Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading points, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. ▪ Imposition of speed controls for vehicles on unpaved	To minimize dust impacts	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S12.78	site roads. 8 kilometers per hour is the recommended limit. ▪ Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs. ▪ Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. ▪ Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed. ▪ Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system.	To minimize dust impacts	MTR / Contractor	All works areas	Construction phase	Implemented
S12.94	Environmental monitoring and audit for dust emission should be conducted in accordance with EM&A Manual during the construction phase of the Project to check compliance with legislative requirements.	To monitor dust impact	MTR / Contactor	Proposed monitoring locations	Design and operation phases	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Hazard to Life						
S13.96/ S13.99	Improved truck design to reduce the amount of combustibles in the cabin and fuel carried in the fuel tank should be minimized to reduce the duration of any fire. The truck should be brand new, diesel powered and equipped with fuel and battery isolation switches, front exhaust spark arrester, 1 x 9 kg water based and 1 x 9 kg dry chemical powder fire extinguishers. This should be combined with monthly vehicle inspection	To meet the ALARP requirement	MTRC/ Contractor	-	Construction phase	Implemented
S13.96	The explosive truck accident frequency should be minimized by implementing a dedicated training programme for both the driver and his attendants, including regular briefing sessions, implementation of a defensive driving attitude. In addition, drivers should be selected based on good safety record, and medical checks.	To meet the ALARP requirement	MTRC/ Contractor	-	Construction phase.	Implemented
S13.96	The contractor should as far as practicable combine the explosive deliveries for a given work area.	To meet the ALARP requirement	MTRC/ Contractor	-	Construction phase	Implemented
S13.96	The explosive truck fire involvement frequency should be minimized by implementing a better emergency response and training to make sure the adequate fire extinguishers are used and attempt is made to evacuate the area of the incident or securing the explosive load if possible. All explosive vehicles should also be equipped with bigger capacity AFFF-type extinguishers.	To meet the ALARP requirement	MTRC/ Contractor	-	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S13.96	A minimum headway between two consecutive truck conveys of at least 10 min is recommended	To meet the ALARP requirement	MTRC/ Contractor	Along explosives transport route.	Construction phase.	Implemented
S13.96/ S13.105	Only the required quantity of explosives for a particular blast should be transported to avoid the return of unused explosives to the magazines.	To reduce the risk during explosives transport	MTRC/ Contractor	-	Construction phase	Implemented
S13.96/ S13.105	If disposal is required for small quantities, disposal should be made in a controlled and safe manner by a Registered Shotfirer.	To reduce the risk during explosives transport	MTRC/ Contractor	-	Construction phase	Implemented
S13.97	Blasting activities including storage and transport of explosives should be supervised and audited by competent site staff to ensure strict compliance with the blasting permit conditions.	To ensure that the risks from the proposed explosives storage and transport would be acceptable	MTRC / Contractor	Works areas at which explosives would be stored and/or used.	Construction phase	Implemented
S13.97	Emergency plan (ie magazine operational manual) shall be developed to address uncontrolled fire in magazine area and transport. The case of fire near an explosive carrying truck in jammed traffic should also be covered. Drill of the emergency plan should be carried out at regular intervals.	To reduce the risk of fire	MTRC/ Contractor	Explosive Magazine and along explosives transport route.	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S13.97	Adverse weather working guideline should be developed to clearly define procedure for transport explosives during thunderstorm.	To ensure safe transport of explosives	MTRC/ Contractor	Along explosives transport route.	Construction phase	Implemented
S13.98	Delivery vehicles shall not be permitted to remain within the secured fenced off magazine store area.	To reduce the risk of fire within the magazine	MTRC / Contractor	Explosive Magazine	Construction phase	Implemented
S13.98	Good house-keeping within and outside of the magazine to ensure that combustible materials (including vegetation) are removed and not allowed to accumulate.	To reduce the risk of fire within the magazine	MTRC / Contractor	Explosive Magazine	Construction phase	Implemented
S13.99/ S13.101	Use only experienced driver(s) with good safety record. Training should be provided to ensure it covers all major safety subjects.	To ensure safe transport of explosives	MTRC/ Contractor	-	Construction phase	Implemented
S13.99	Develop procedure to ensure that parking space on the site is available for the explosive truck. Confirmation of parking space should be communicated to truck drivers before delivery.	To ensure that the risks from the proposed explosives storage and transport would be acceptable	MTRC/ Contractor	Explosive magazine	Construction phase	Implemented
S13.99	Detonators shall not be transported in the same vehicle with other Class 1 explosives	To reduce the risk of explosion during the transport of cartridge emulsion	MTRC / Contractor	-	Construction phase	Implemented
S13.99	During transport of the explosives within the tunnel, hot work should not be permitted in the vicinity of the explosives offloading or charging activities.	To ensure safe transport of explosives	MTRC/ Contractor	Along explosives transport route.	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S13.99	Ensure that packaging of detonators remains intact until handed over at blasting site.	To reduce the risk of explosion during the transport of detonator	MTRC/ Contractor	-	Construction phase	Implemented
S13.99	Horizontal fire screen on cargo deck and vertical fire screen mounted at least 150 mm behind the drivers cab and 100 mm from the steel cargo compartment, the vertical screen shall protrude 150 mm in excess of all three (3) sides of the steel cargo compartment.	To reduce the risk during explosives transport	MTRC/ Contractor	-	Construction phase	Implemented
S13.104	Ensure that cartridge emulsion with high water content should be preferred. Also, the emulsion with perchlorate formulation should be avoided.	To ensure safe explosives to be used	MTRC/ Contractor	-	Construction phase	Implemented
Landfill Gas Hazard – Design and Construction Phases						
S14.73 & S14.86	- All personnel who work on site and all visitors to the site should be made aware of the possibility of ignition of gas in the vicinity of excavations. Safety notices should be posted warning of the potential hazards.	Protect the workers from landfill gas hazards	Contractor	XRL tunnels within the NTML Consultation Zone, Barging Point and Nursery Site	Construction phase	Implemented
S14.73	- Those staff who work in, or have responsibility for "at risk" areas, including all excavation workers, supervisors and engineers working within the Consultation Zone, should receive appropriate training on working in areas susceptible to landfill gas, fire and explosion hazards.	Protect the workers from landfill gas hazards	Contractor	XRL tunnels within the NTML Consultation Zone	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S14.73	- During all works, safety procedures will be implemented to minimize the risks of fires and explosions and asphyxiation of workers (especially in confined space).	Protect the workers from landfill gas hazards	Contractor	XRL tunnels within the NTML Consultation Zone	Construction phase	Implemented
S14.73	- Safety officers, specifically trained with regard to landfill gas related hazards and the appropriate actions to take in adverse circumstances will be present on all worksites throughout the works.	Protect the workers from landfill gas hazards	Contractor	XRL tunnels within the NTML Consultation Zone	Construction phase	Implemented
S14.73, S14.86, S14.87	- Smoking and naked flames will be prohibited within confined spaces. 'No Smoking' and 'No Naked Flame' notices in Chinese and English will be posted prominently around the construction site. Safety notices should be posted warning of the potential hazards.	Protect the workers from landfill gas hazards	Contractor	XRL tunnels within the NTML Consultation Zone, Barging Point and Nursery Site	Construction phase	Implemented
S14.73	- Welding, flame-cutting or other hot works may only be carried out in confined spaces when controlled by a 'permit to work' procedure, properly authorised by the Safety Officer. The permit to work procedure will set down clearly the requirements for continuous monitoring of methane, carbon dioxide and oxygen throughout the period during which the hot works are in progress. The procedure will also require the	Protect the workers from landfill gas hazards	Contractor	XRL tunnels within the NTML Consultation Zone	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S14.73	presence of an appropriately qualified person who shall be responsible for reviewing the gas measurements as they are made, and who shall have executive responsibility for suspending the work in the event of unacceptable or hazardous conditions. Only those workers who are appropriately trained and fully aware of the potentially hazardous conditions which may arise will be permitted to carry out hot works in confined areas.	Protect the workers from landfill gas hazards	Contractor	XRL tunnels within the NTML Consultation Zone	Construction phase	Implemented
S14.73	- A mechanical ventilation system must be in use at all times during which personnel are engaged in works inside the tunnel or excavation and be evacuated in the event of power outages. Work must not be carried out in the absence of mechanical ventilation and supervision of adequately trained safety personnel. In exceptional case where work is carried out under non-ventilated condition, any electrical equipment used, such as motors and extension cords, should be intrinsically safe.	Protect the workers from landfill gas hazards	Contractor	XRL tunnels within the NTML Consultation Zone	Construction phase	Implemented
S14.73	- Adequate fire extinguishing equipment, fire-resistant clothing and breathing apparatus sets should be made available on site.	Protect the workers from landfill gas hazards	Contractor	XRL tunnels within the NTML Consultation Zone	Construction phase	Implemented

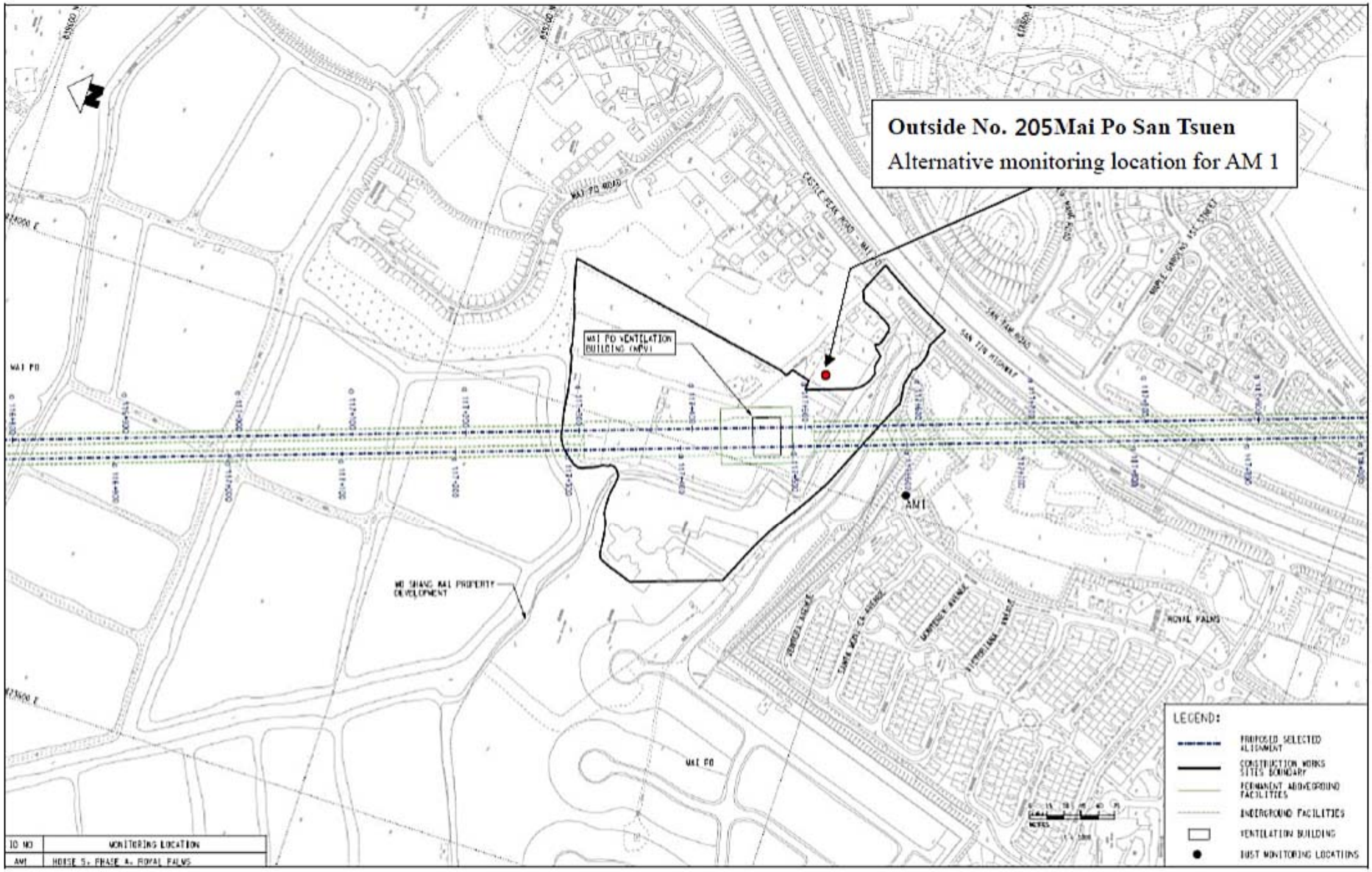
EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S14.86	- Raising the site office 500mm above ground.	Protect the workers from landfill gas hazards	Contractor	Barging Point	Construction phase	Implemented
S14.86	- Utilities services connected to the site office and the annulus around these service entry points should be properly sealed.	Protect the workers from landfill gas hazards	Contractor	Barging Point	Construction phase	Implemented
S14.74	- Construction works to be undertaken in confined space should follow the relevant Regulations under Chapter 59 Factories and Industrial Undertakings Ordinance and Chapter 509 Occupational Health and Safety Ordinance.	Protect the workers from landfill gas hazards	Contractor	XRL tunnels within the NTML Consultation Zone	Construction phase	Implemented
S14.73	- Monitoring of methane, carbon dioxide and oxygen inside the XRL tunnels.	Protect the workers from landfill gas hazards	Contractor	XRL tunnels within the NTML Consultation Zone	Construction phase	Implemented
S14.75	- A walkover survey to monitor flammable gas at all joints and cracks, if identified, upon completion of the tunnel work. Rectifications, such as sealing of cracks and inspection of tunnel seals, shall be carried out for any signs of the presence of flammable gas. The survey should be conducted under non-ventilated condition and before starting the work of the day.	Confirm no landfill gas ingress into the XRL tunnels	Contractor	XRL tunnels within the NTML Consultation Zone	Construction phase	Implemented

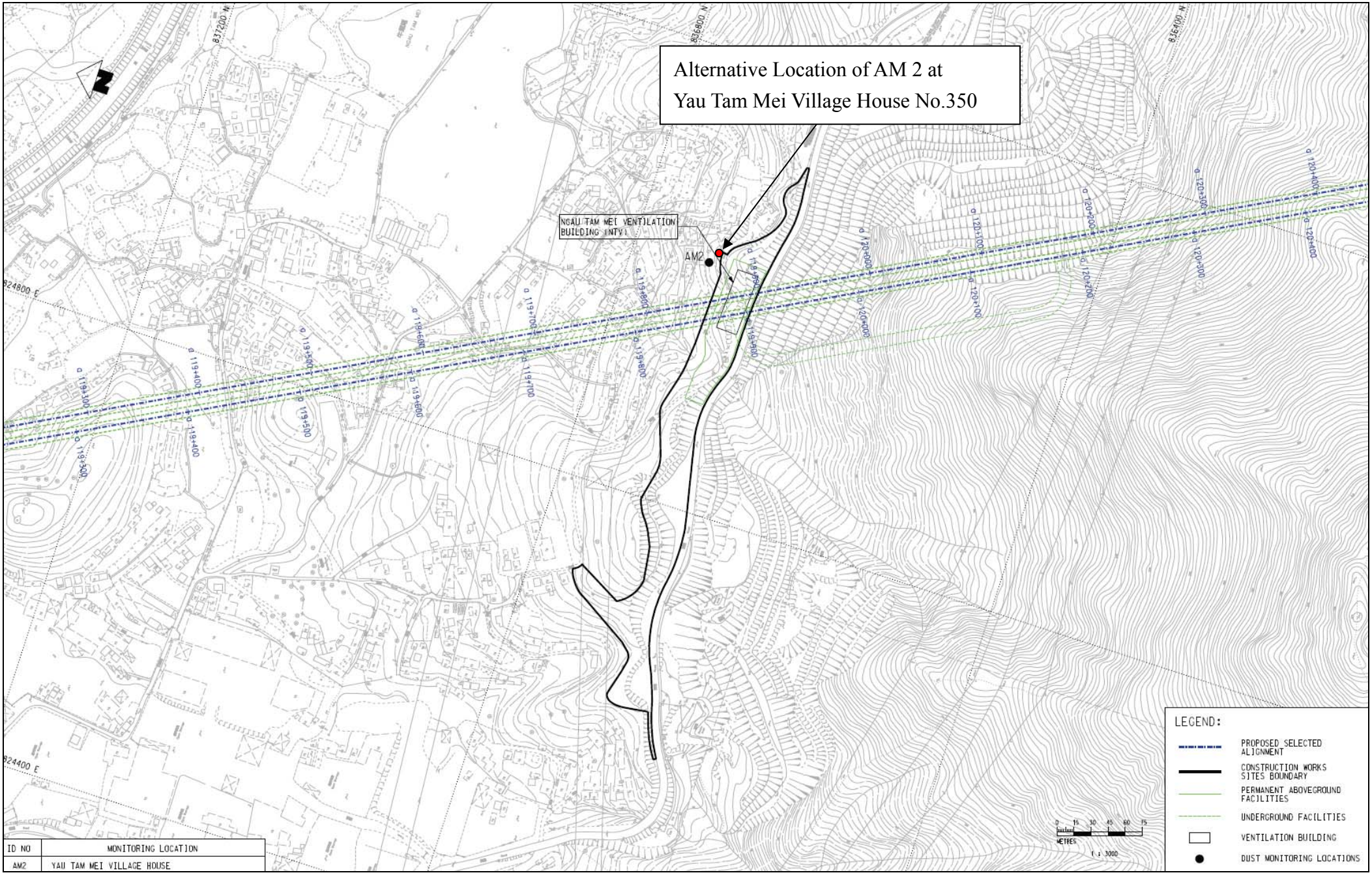
EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S14.76	- Weekly monitoring of methane, carbon dioxide and oxygen in the form of a walkover survey at 20m intervals for section of tunnels under NTML and 50m interval within the NTML Consultation Zone should be conducted after completion of the tunnel construction works and not less than 3 months before commencement of operation. The survey should be conducted under non-ventilated condition and before starting the work of the day.	Confirm no landfill gas ingress into the XRL tunnels	Contractor	XRL tunnels within the NTML Consultation Zone	Construction phase	Implemented
S14.77	- A summary of the monitoring results should be submitted to EPD for record before the commencement of operational phase. The results should be reviewed and agreed with EPD before the commencement of operation to determine the monitoring requirements during the operational phase	To review and agree the monitoring requirement during the operational phase	MTR/ Contractor	-	Before operation	Implemented
S14.78	- Appropriate sealant will be applied to joints to prevent the ingress of groundwater, which will also form a low permeability gas barrier. Good workmanship and adequate construction supervision will be required to ensure the actual works are implemented as per the design requirements. This will be implemented by MTRC's Material and Workmanship Specification.	Protect the XRL tunnels from landfill gas hazards	Design Engineer/ Contractor	XRL tunnels within the NTML Consultation Zone	Design and Construction phases	Implemented

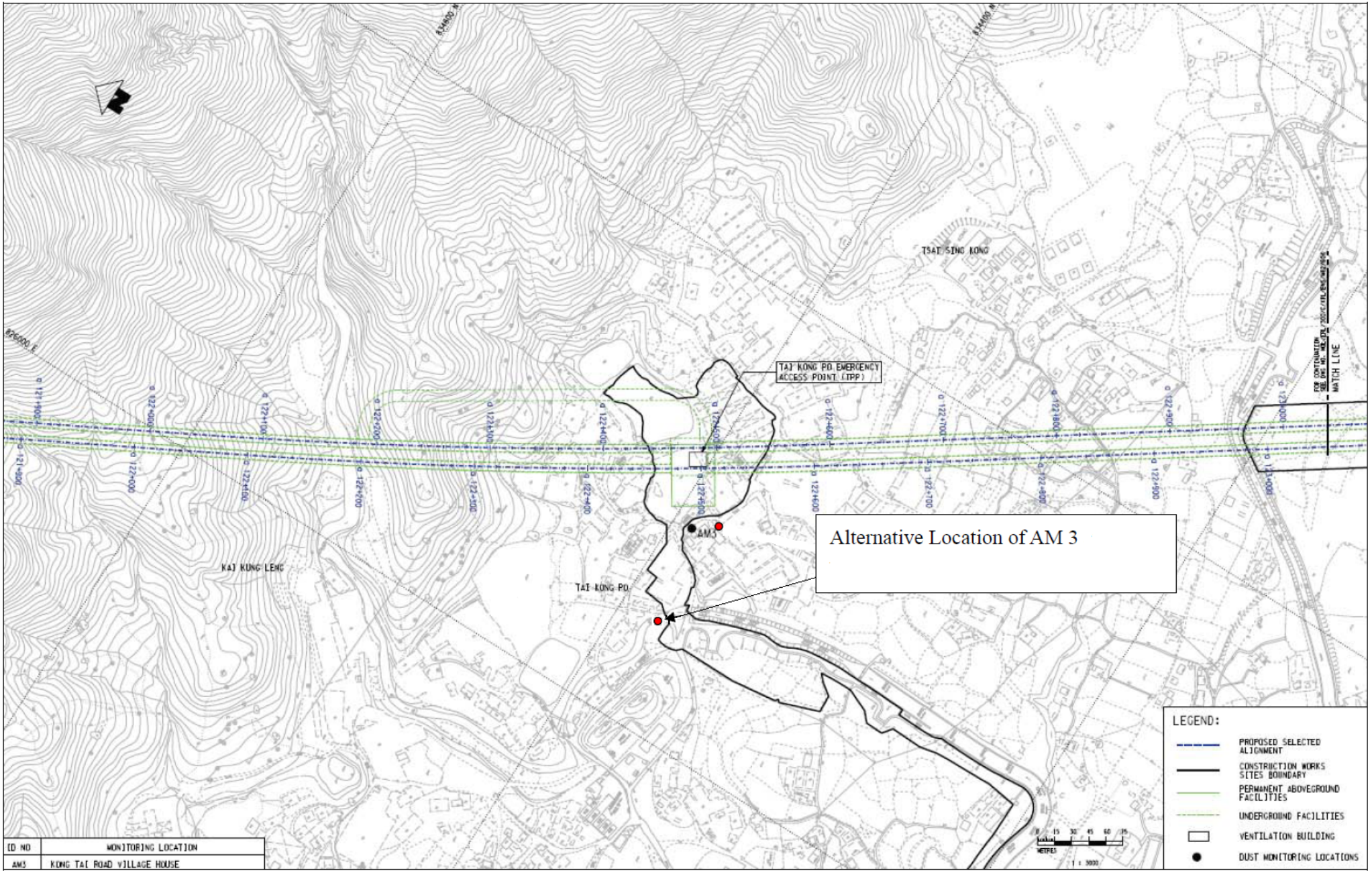
EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S14.79	- Adequate ventilation will be needed as part of the tunnel design to act as an active gas control when needed.	Protect the XRL tunnels from landfill gas hazards	Design Engineer	XRL tunnels within the NTML Consultation Zone	Design phase	Implemented
S14.80	- Upon completion of the landfill gas protection measures, a report on the implemented landfill gas protection measures with relevant as-built drawings and other detailed information showing that the design measures mentioned in this assessment to protect the tunnels from landfill gas hazard have been properly incorporated should be submitted to EPD.	Ensure landfill gas protection measures have been completed	Contractor	XRL tunnels within the NTML Consultation Zone	Construction phase	Implemented

Appendix D

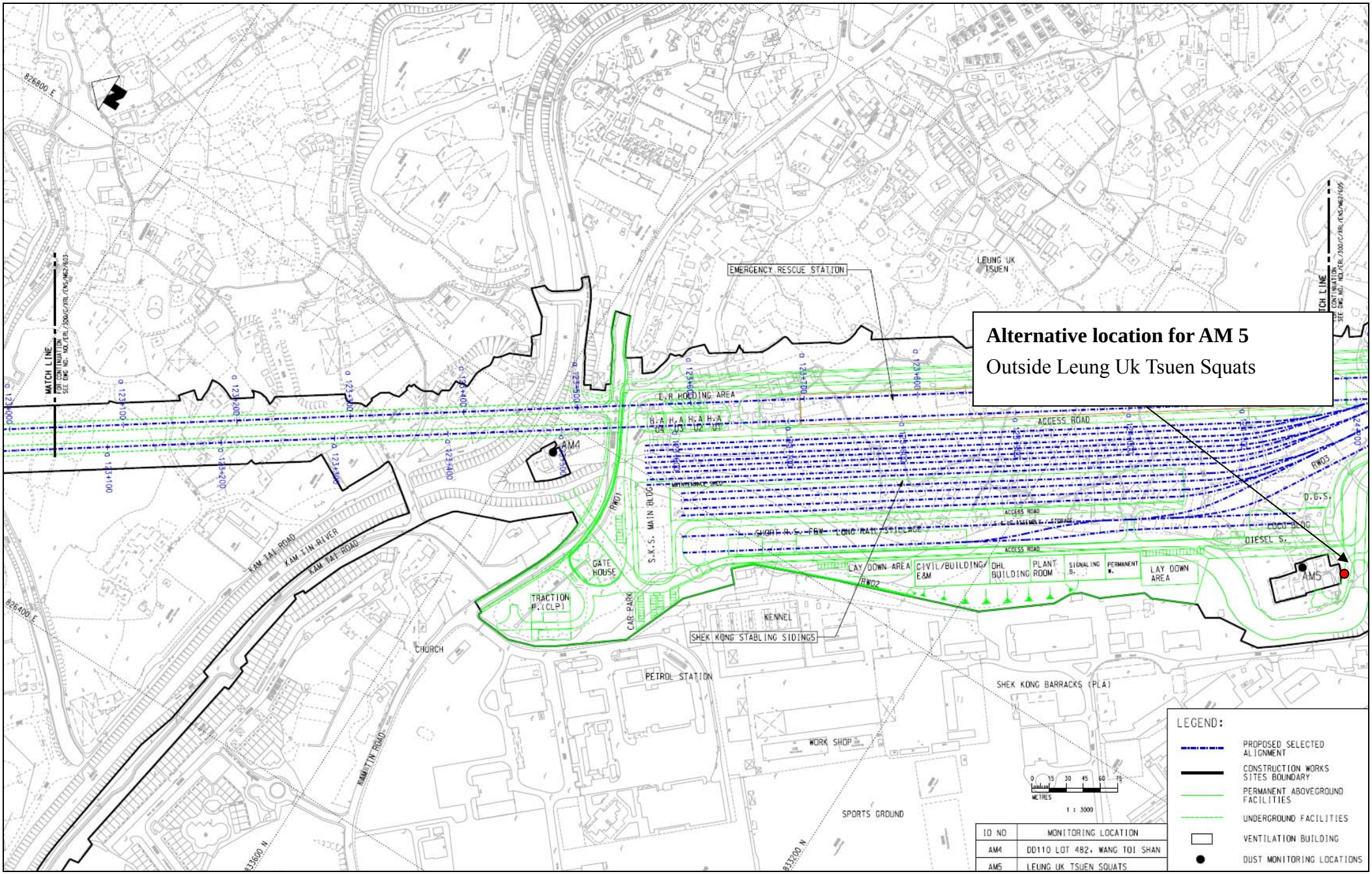
Monitoring Locations

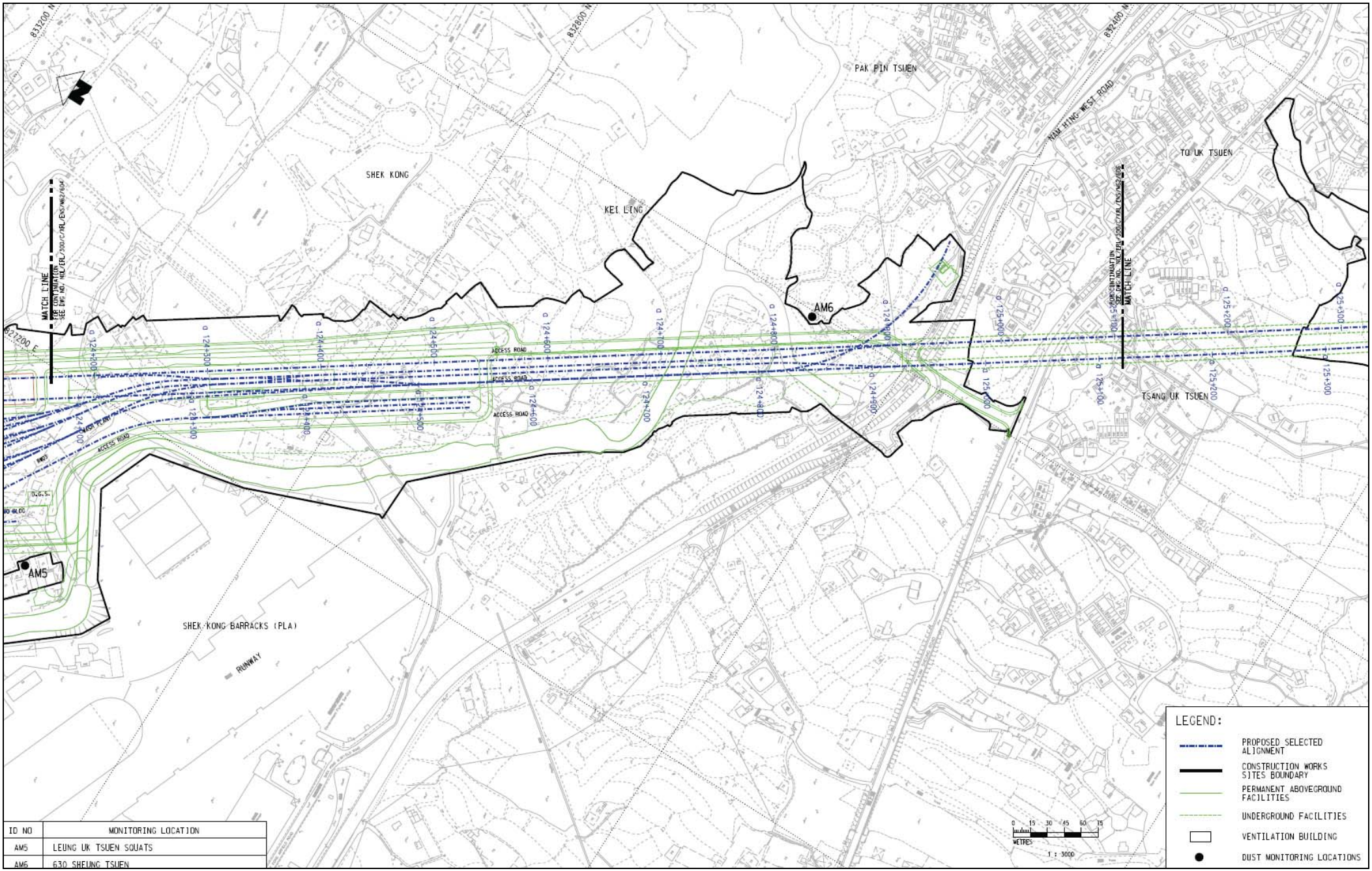

Outside No. 205Mai Po San Tsuen
Alternative monitoring location for AM 1
MAI PO VENTILATION BUILDING (MPV)
MAI PO
CASTLE PEAK ROAD - MAI PO
SAN TIN HIGHWAY
AM1
MO SHANG WAI PROPERTY DEVELOPMENT
ROYAL PALMS
LEGEND:
PROPOSED SELECTED ALIGNMENT
CONSTRUCTION WORKS SITES BOUNDARY
PERMANENT ABOVEGROUND FACILITIES
UNDERGROUND FACILITIES
VENTILATION BUILDING
DUST MONITORING LOCATIONS
ID NO
MONITORING LOCATION
AM1
NOISE S. PHASE A. ROYAL PALMS


Alternative Location of AM 2 at
Yau Tam Mei Village House No.350
NGAU TAM MEI VENTILATION BUILDING (NTV)
AM2
837200 N
836800 N
836400 N
824800 E
824400 E
LEGEND:
PROPOSED SELECTED ALIGNMENT
CONSTRUCTION WORKS SITES BOUNDARY
PERMANENT ABOVEGROUND FACILITIES
UNDERGROUND FACILITIES
VENTILATION BUILDING
DUST MONITORING LOCATIONS
METRES
1 : 3000
ID NO
MONITORING LOCATION
AM2
YAU TAM MEI VILLAGE HOUSE

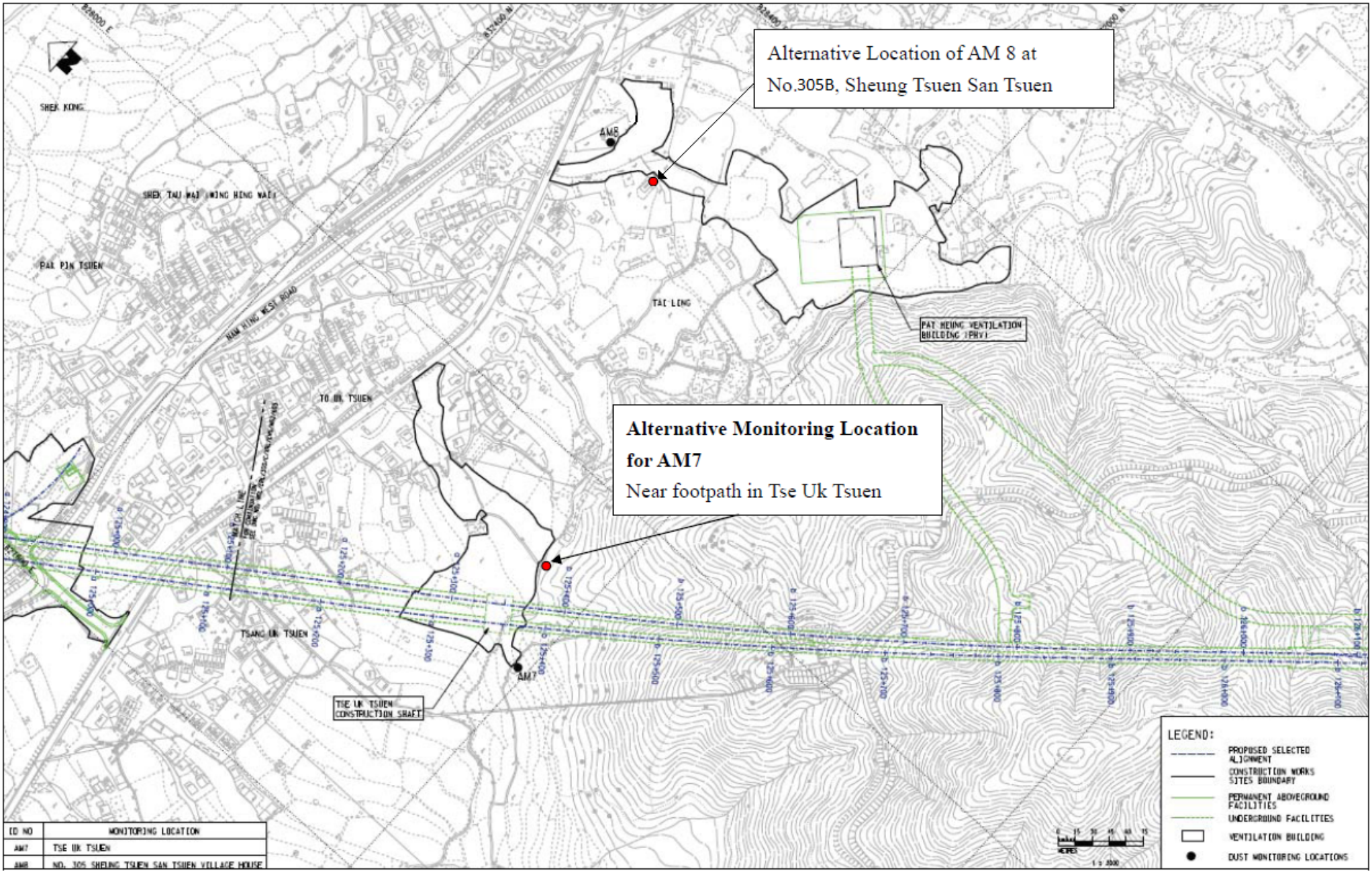


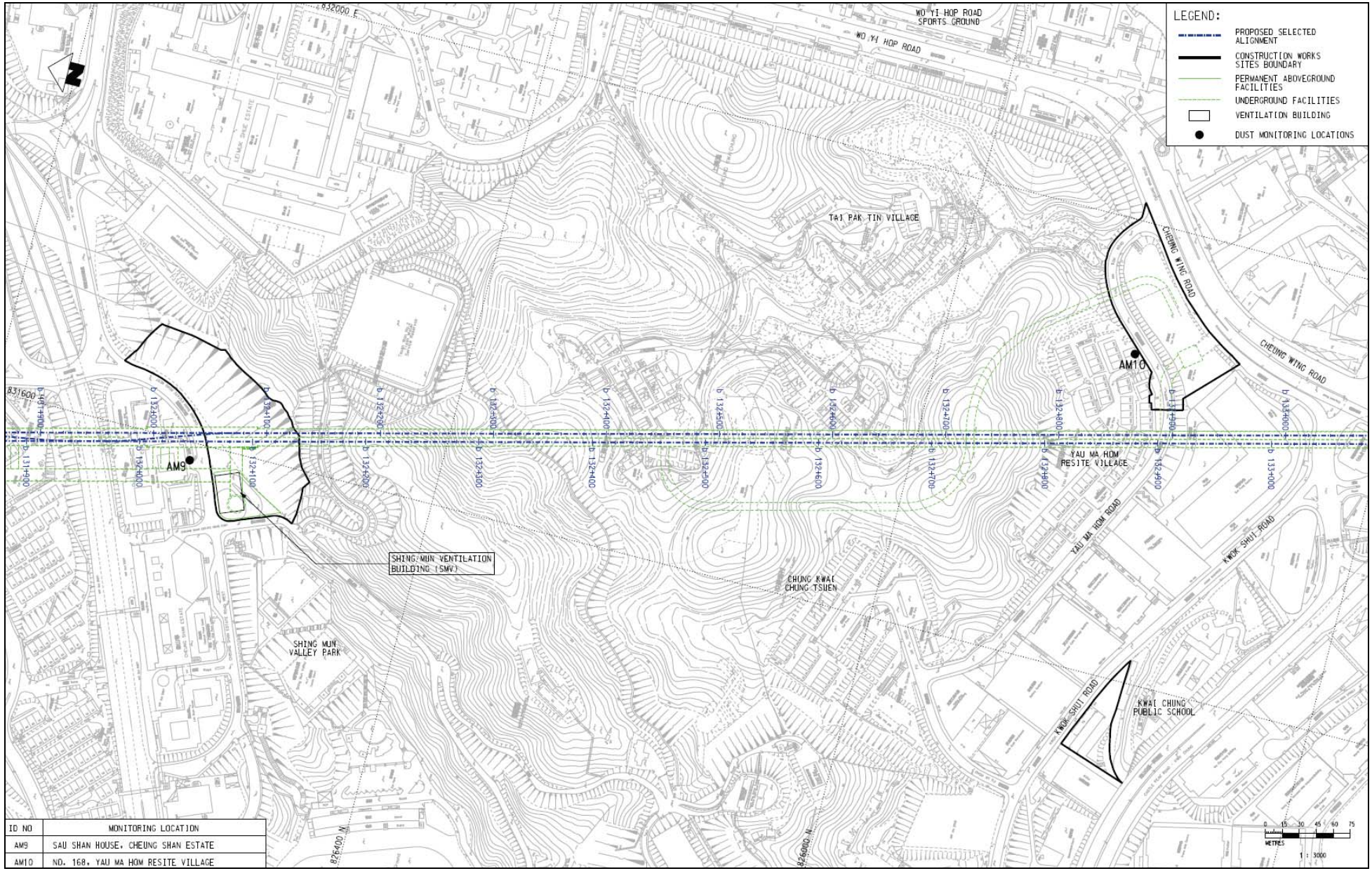
ID NO	MONITORING LOCATION
AM3	KONG TAI ROAD VILLAGE HOUSE


Alternative location for AM 5
Outside Leung Uk Tsuen Squats
EMERGENCY RESCUE STATION
LEUNG UK TSUEN
MATCH LINE
FOR CONTINUATION SEE DWG NO. NOL/ERL/300/C/KRL/ENS/M&E/603
MATCH LINE
FOR CONTINUATION SEE DWG NO. NOL/ERL/300/C/KRL/ENS/M&E/695
T.R HOEDING AREA
ACCESS ROAD
AM4
AM5
RW01
RW02
RW03
S.K.S. MAIN BLDG.
MAINTENANCE SHED
SHORT R.S.
LONG RAIL STORAGE
D.G.S.
DIESEL S.
LAY DOWN AREA
CIVIL/BUILDING E&M
OHL BUILDING
PLANT ROOM
SIGNALING B.
PERMANENT W.
LAY DOWN AREA
GATE HOUSE
TRACTION P.(CLP)
CAR PARK
KENNEL
SHEK KONG STABLING SIDINGS
CHURCH
PETROL STATION
SHEK KONG BARRACKS (PLA)
WORK SHOP
SPORTS GROUND
KAM TAI ROAD
KAM TIN RIVER
KAM TAI ROAD
KAM TIN ROAD
826800 E
826400 E
833600 N
833200 N
METRES
1 : 3000
LEGEND:
PROPOSED SELECTED ALIGNMENT
CONSTRUCTION WORKS SITES BOUNDARY
PERMANENT ABOVEGROUND FACILITIES
UNDERGROUND FACILITIES
VENTILATION BUILDING
DUST MONITORING LOCATIONS
ID NO
MONITORING LOCATION
AM4
DD110 LOT 482, WANG TOI SHAN
AM5
LEUNG UK TSUEN SQUATS

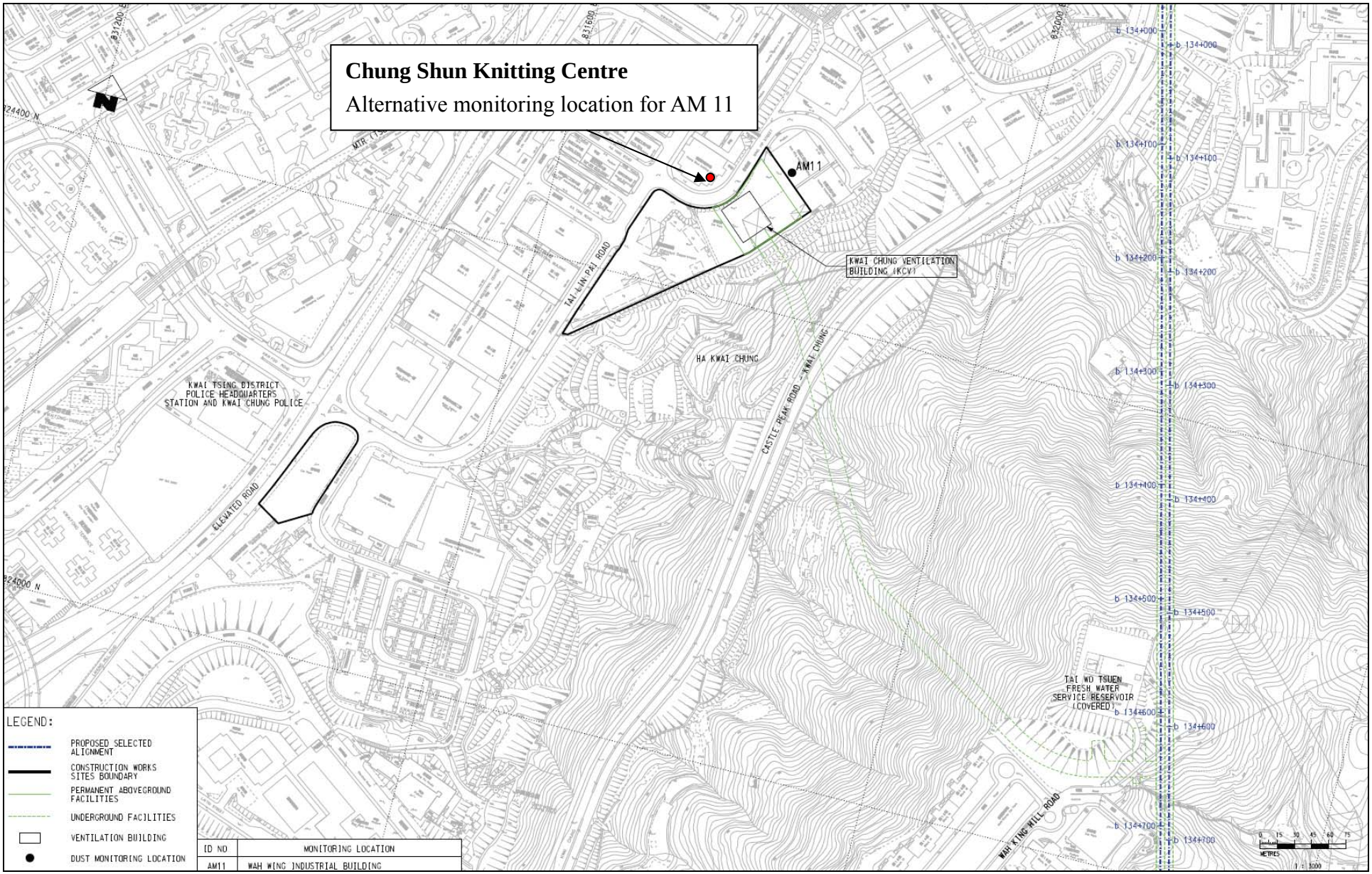


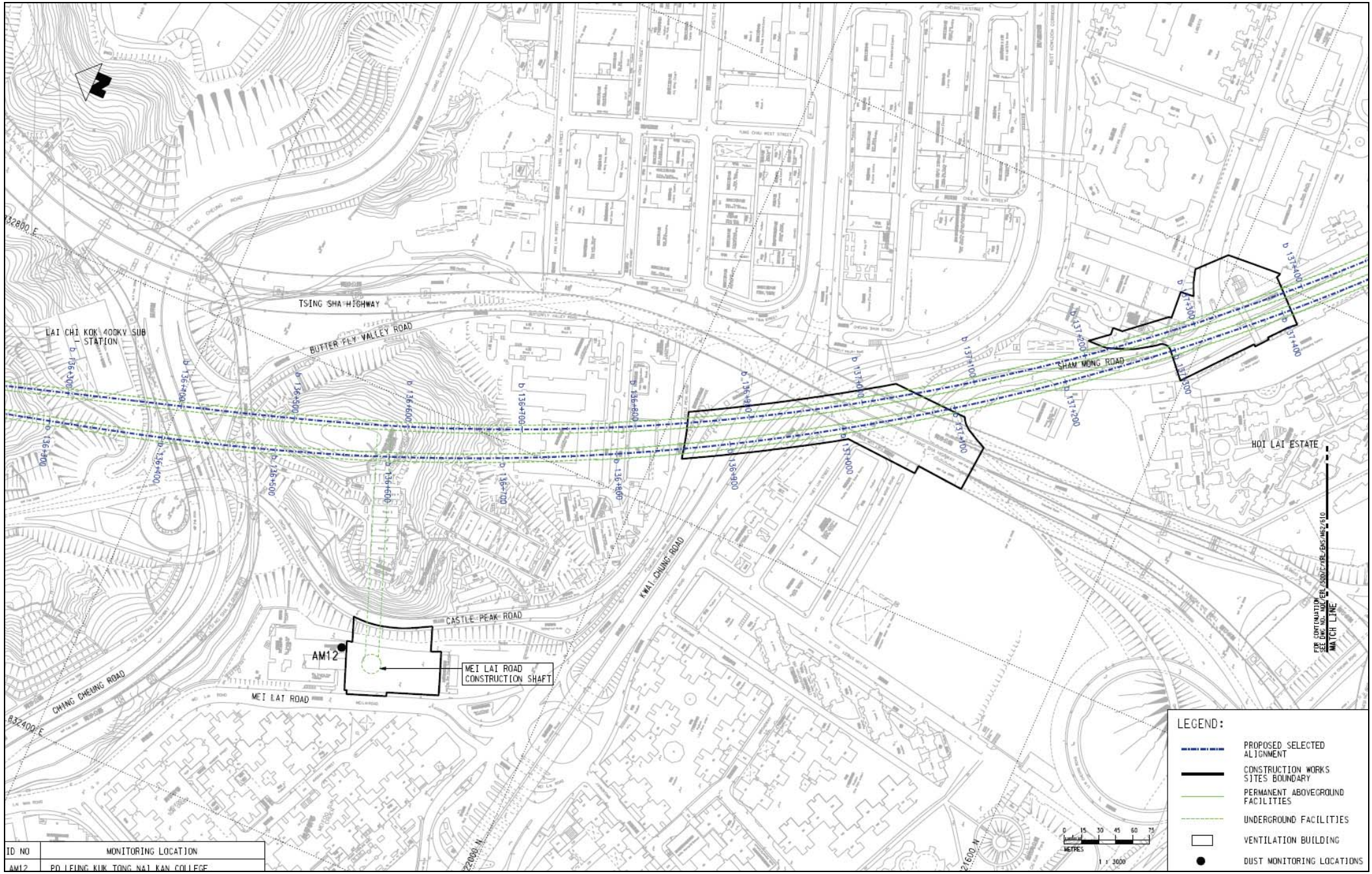
ID NO	MONITORING LOCATION
AM5	LEUNG UK TSUEN SQUATS
AM6	630 SHEUNG TSUEN


Alternative Location of AM 8 at
No.305B, Sheung Tsuen San Tsuen
Alternative Monitoring Location
for AM7
Near footpath in Tse Uk Tsuen
AM8
AM7
SHEK KONG
SHEK TAU WAI
PAK PIN TSUEN
TAI LENG
PAT HEUNG VENTILATION BUILDING (PHV)
TO UK TSUEN
TSANG UK TSUEN
TSE UK TSUEN CONSTRUCTION SHAFT
LEGEND:
PROPOSED SELECTED ALIGNMENT
CONSTRUCTION WORKS SITES BOUNDARY
PERMANENT ABOVEGROUND FACILITIES
UNDERGROUND FACILITIES
VENTILATION BUILDING
DUST MONITORING LOCATIONS
ID NO
MONITORING LOCATION
AM7
TSE UK TSUEN
AM8
NO. 305 SHEUNG TSUEN SAN TSUEN VILLAGE HOUSE

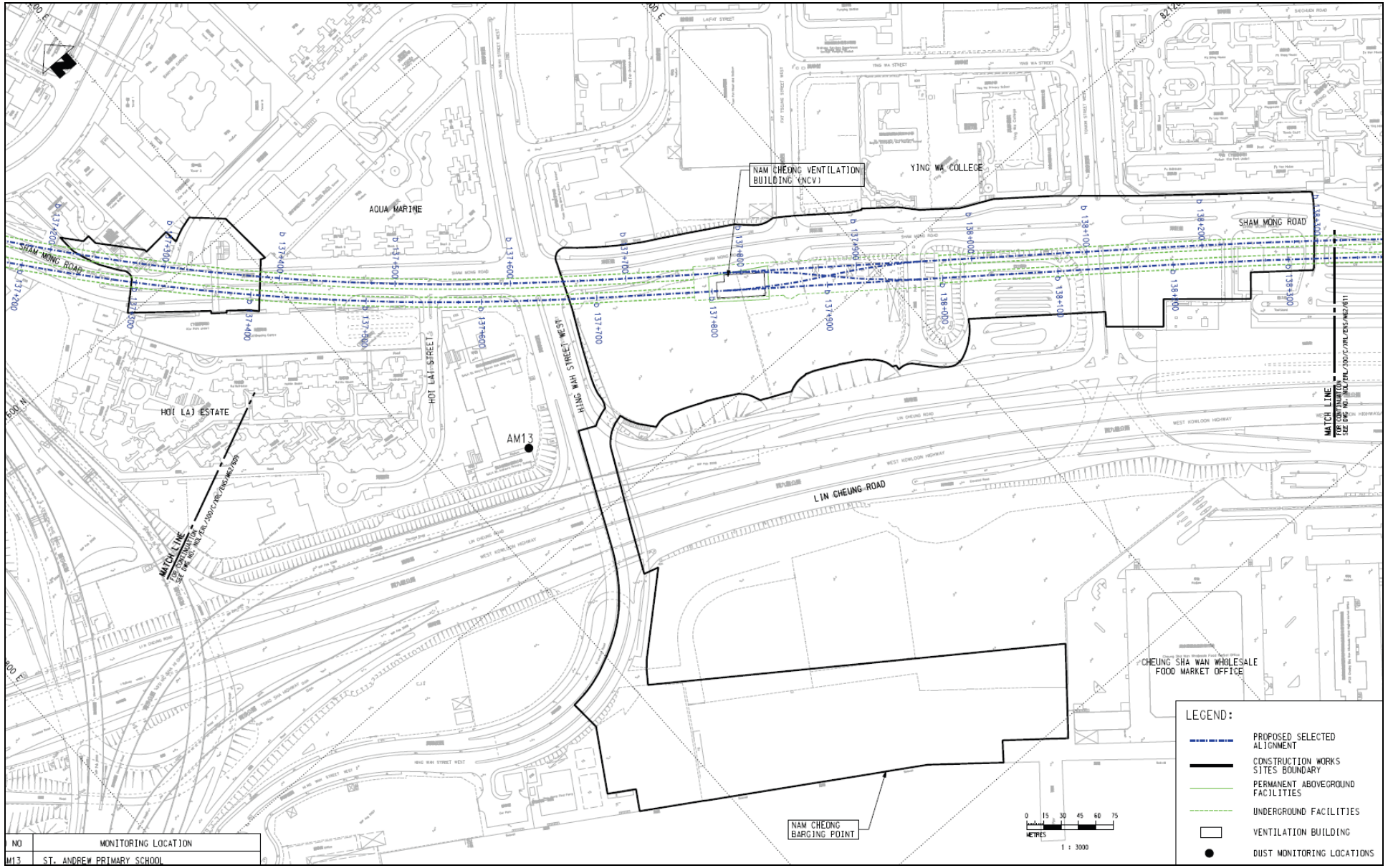


ID NO	MONITORING LOCATION
AM9	SAU SHAN HOUSE, CHEUNG SHAN ESTATE
AM10	NO. 168, YAU MA HOM RESITE VILLAGE

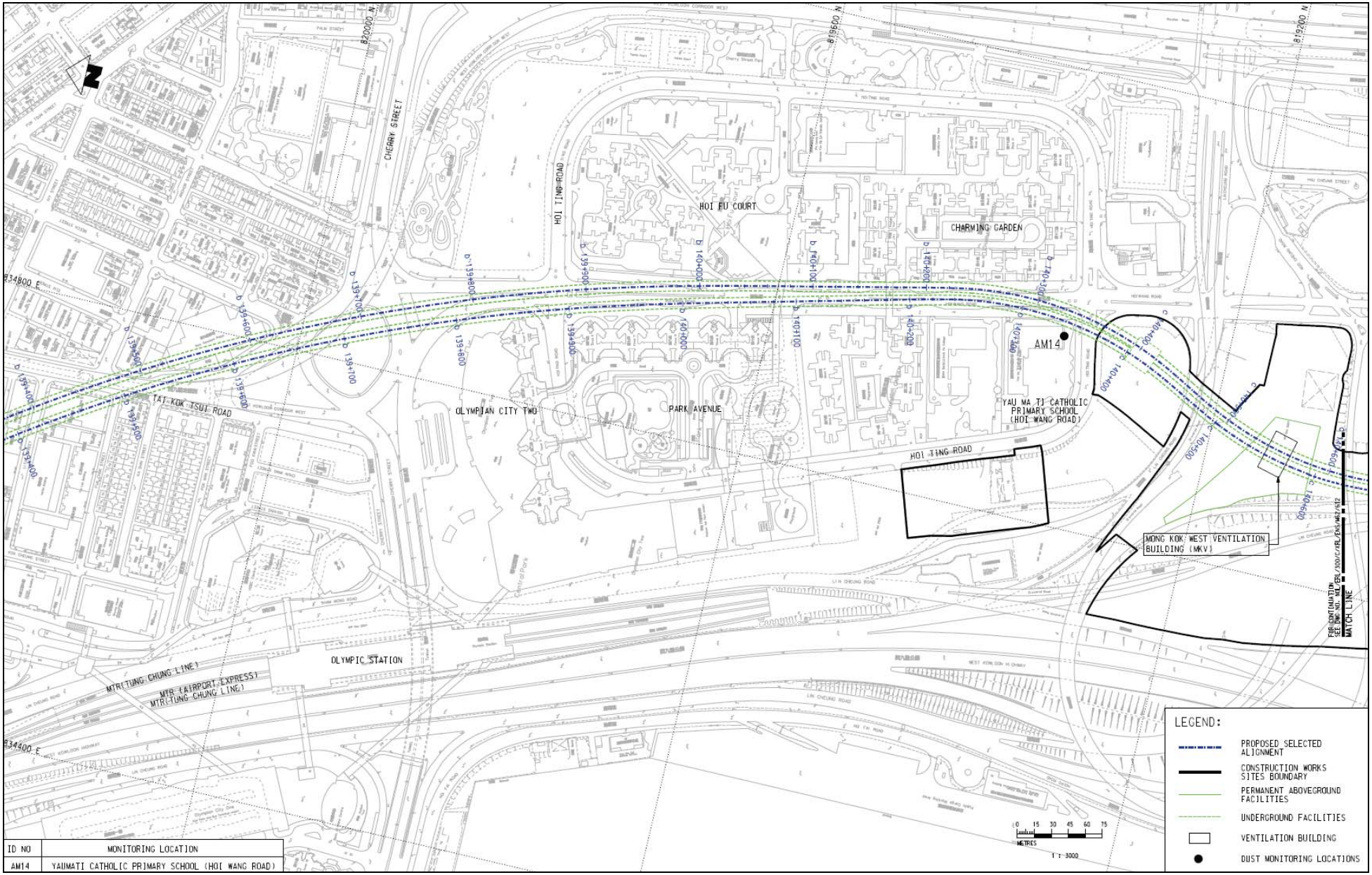

Chung Shun Knitting Centre
Alternative monitoring location for AM 11
AM11
KWAI CHUNG VENTILATION BUILDING (KCV)
TAI KLIN PAI ROAD
HA KWAI CHUNG
CASTLE PEAK ROAD - KWAI CHUNG
KWAI TSING DISTRICT POLICE HEADQUARTERS STATION AND KWAI CHUNG POLICE
ELEVATED ROAD
TAI WO TSUEN FRESH WATER SERVICE RESERVOIR (COVERED)
WAH KING HILL ROAD
LEGEND:
PROPOSED SELECTED ALIGNMENT
CONSTRUCTION WORKS SITES BOUNDARY
PERMANENT ABOVEGROUND FACILITIES
UNDERGROUND FACILITIES
VENTILATION BUILDING
DUST MONITORING LOCATION
ID NO
MONITORING LOCATION
AM11
WAH WING INDUSTRIAL BUILDING



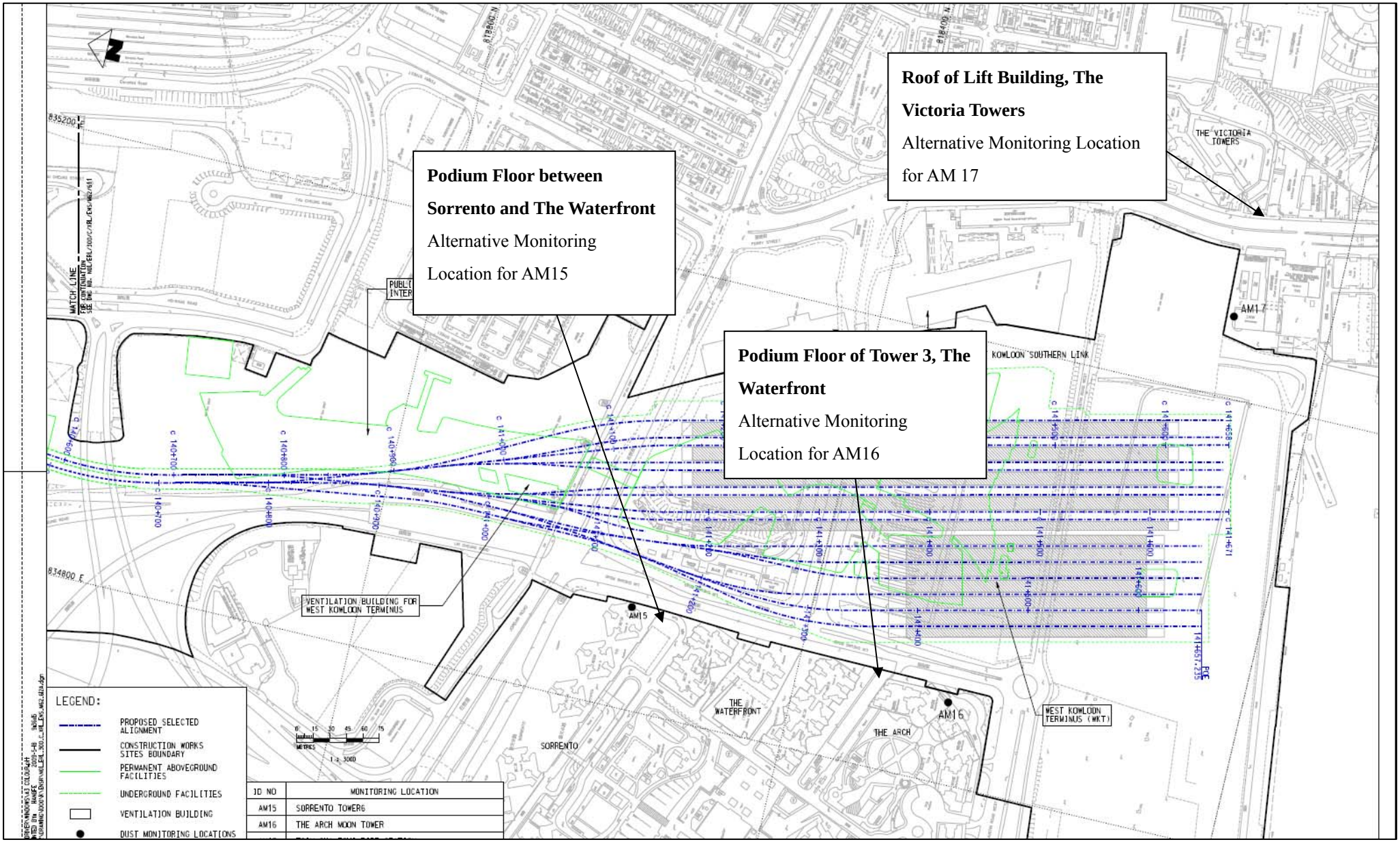
ID NO	MONITORING LOCATION
AM12	PO LEUNG KUK TONG NAI KAN COLLEGE



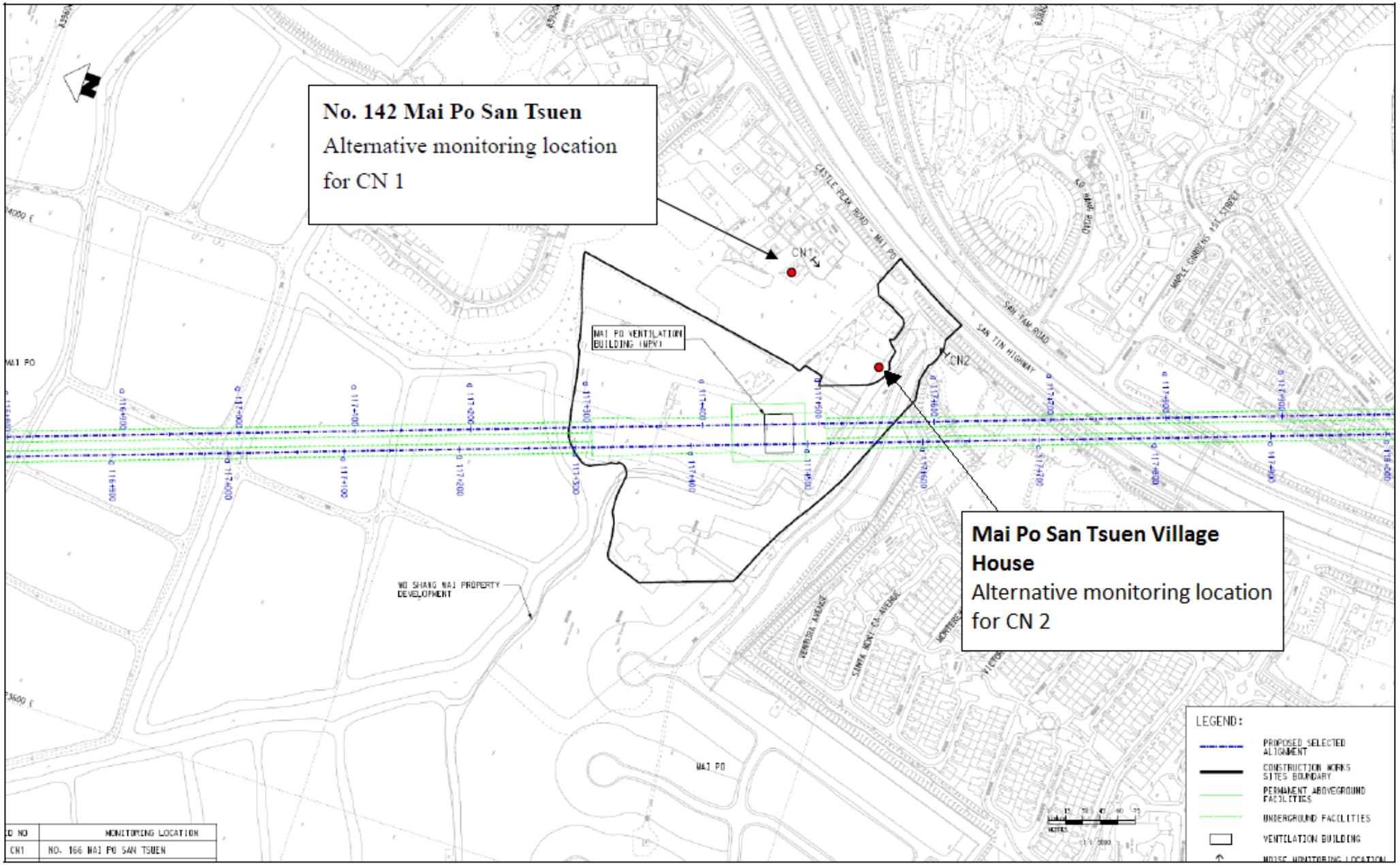
NO	MONITORING LOCATION
M13	ST. ANDREW PRIMARY SCHOOL

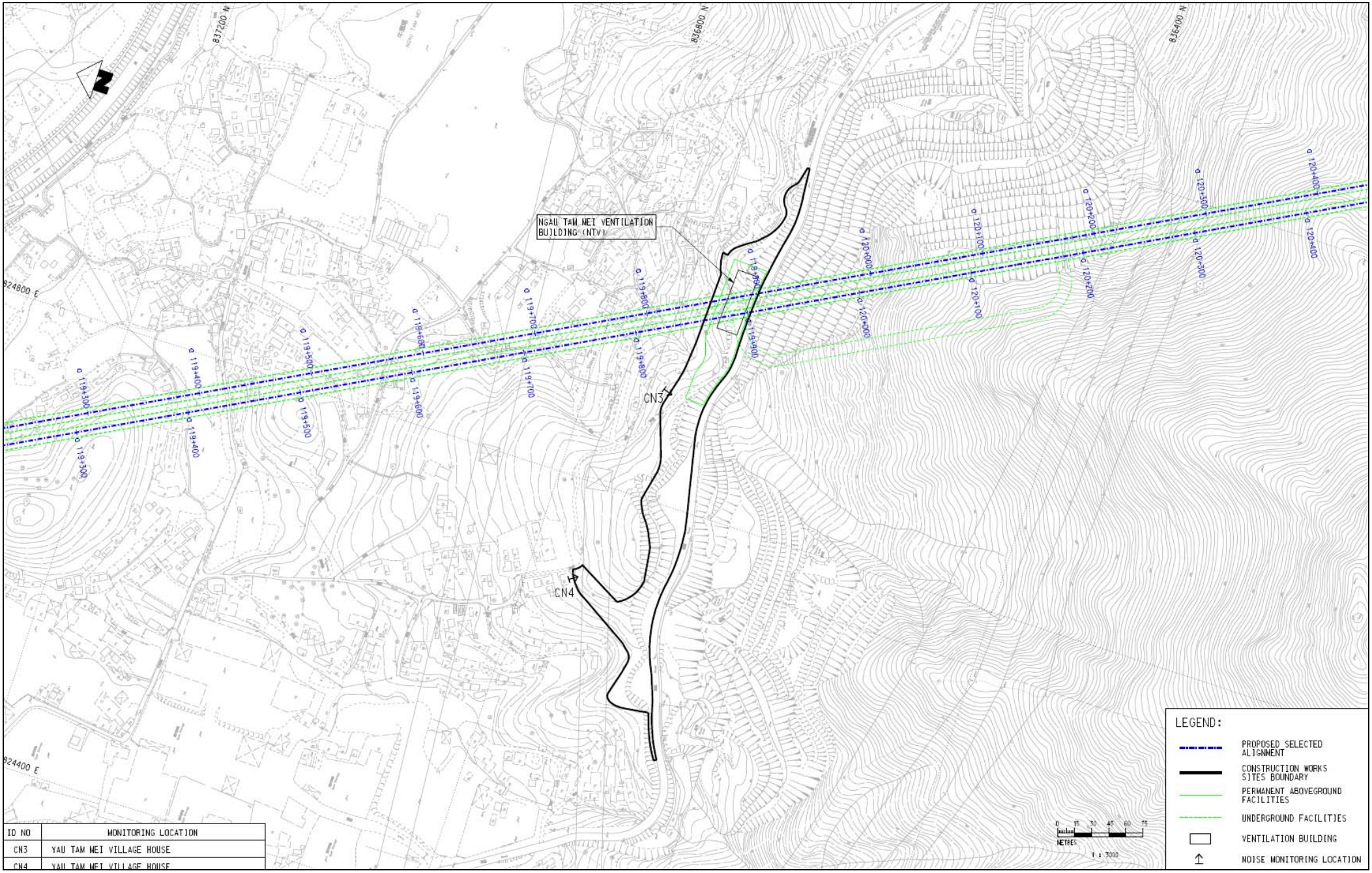


ID NO	MONITORING LOCATION
AM14	YAUMATI CATHOLIC PRIMARY SCHOOL (HOI WANG ROAD)

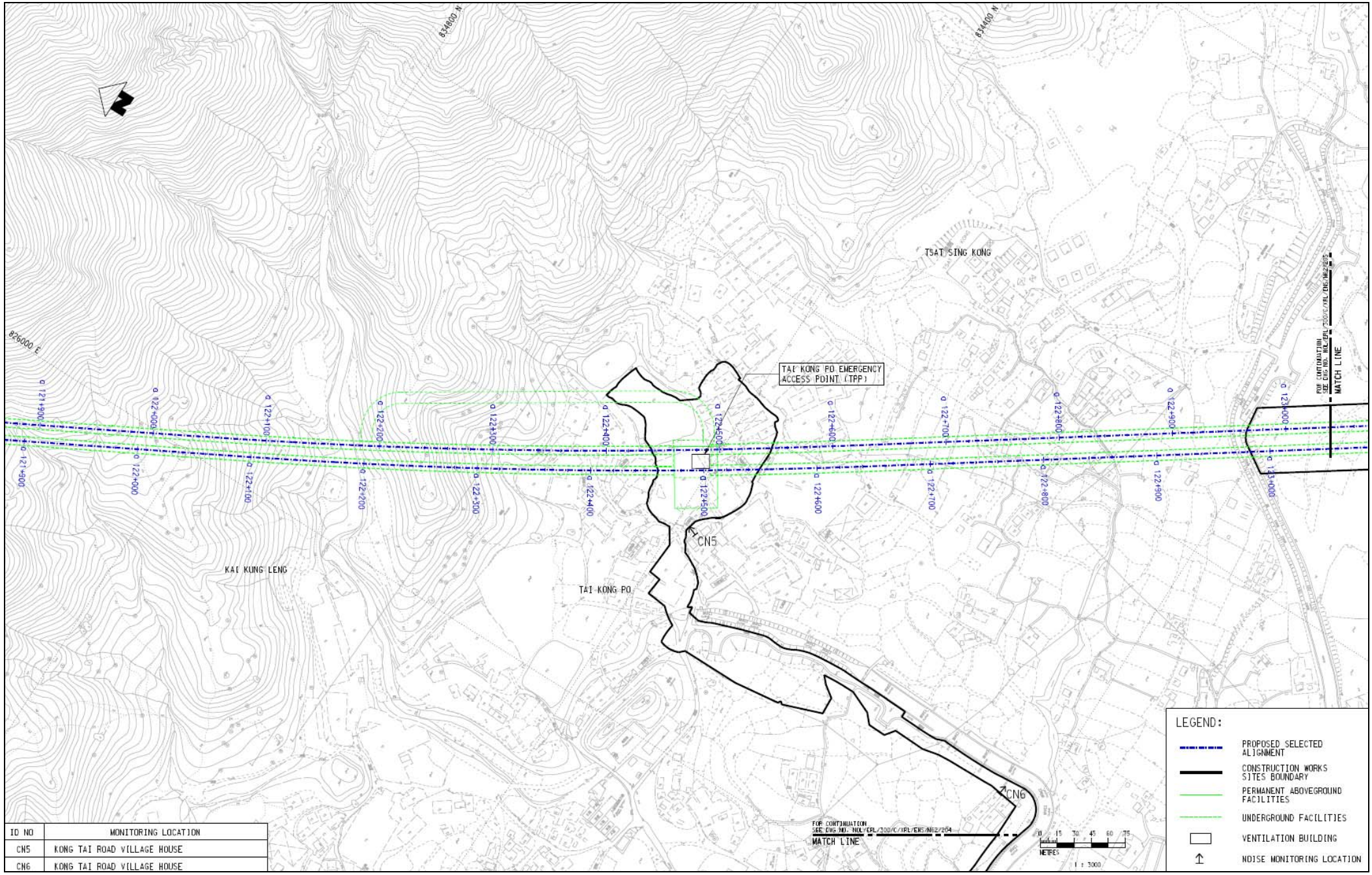


Dust monitoring locations


No. 142 Mai Po San Tsuen
Alternative monitoring location for CN 1
CN1
CN2
MAI PO VENTILATION BUILDING (MPV)
Mai Po San Tsuen Village House
Alternative monitoring location for CN 2
WO SHANG WAI PROPERTY DEVELOPMENT
MAI PO
CASTLE PEAK ROAD - MAI PO
SAN TIN HIGHWAY
SAN TAM ROAD
LEGEND:
PROPOSED SELECTED ALIGNMENT
CONSTRUCTION WORKS SITES BOUNDARY
PERMANENT ABOVEGROUND FACILITIES
UNDERGROUND FACILITIES
VENTILATION BUILDING
NO
MONITORING LOCATION
CN1
NO. 166 MAI PO SAN TSUEN



ID NO	MONITORING LOCATION
CN3	YAU TAM MEI VILLAGE HOUSE
CN4	YAU TAM MEI VILLAGE HOUSE



ID NO	MONITORING LOCATION
CN5	KONG TAI ROAD VILLAGE HOUSE
CN6	KONG TAI ROAD VILLAGE HOUSE

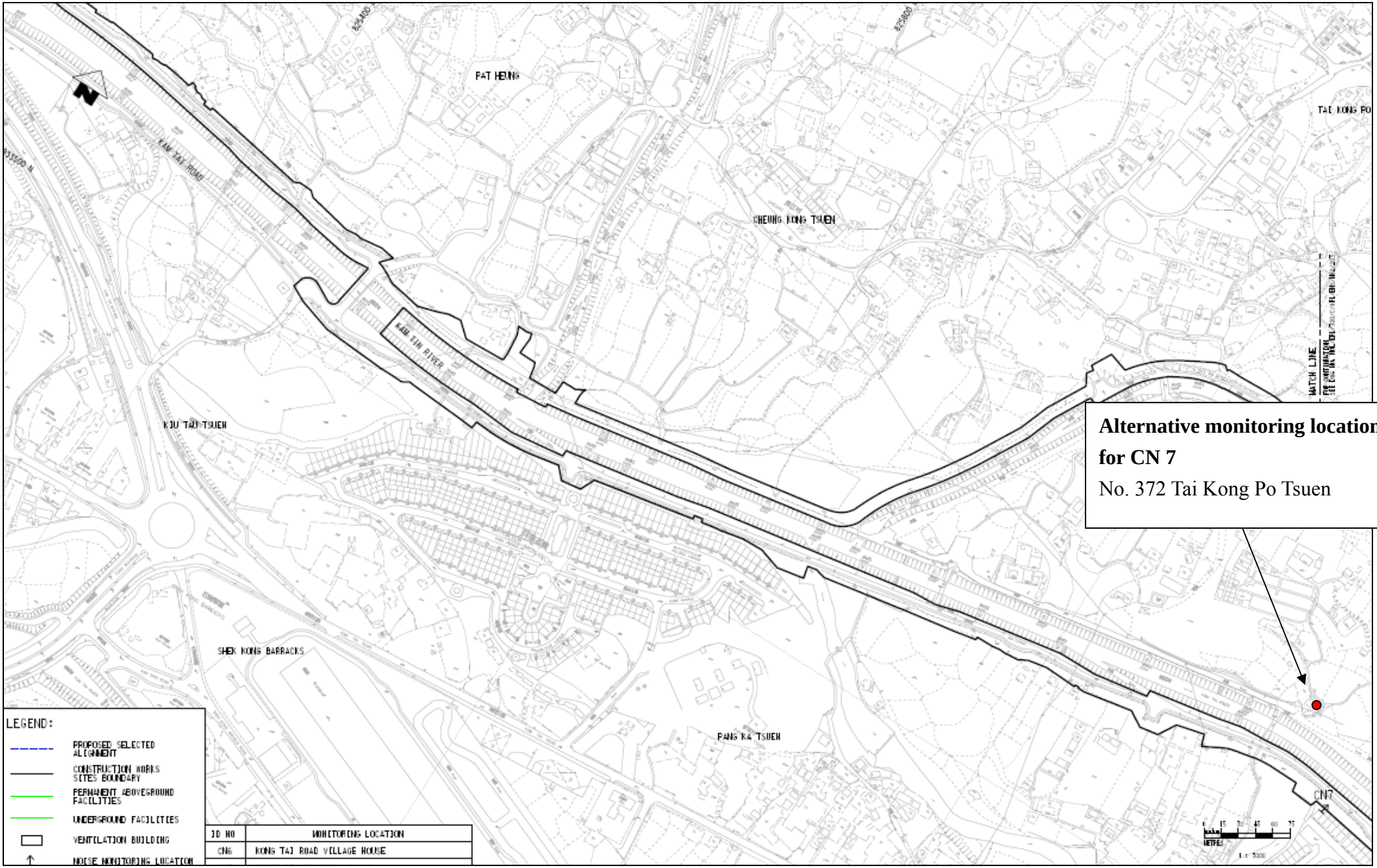
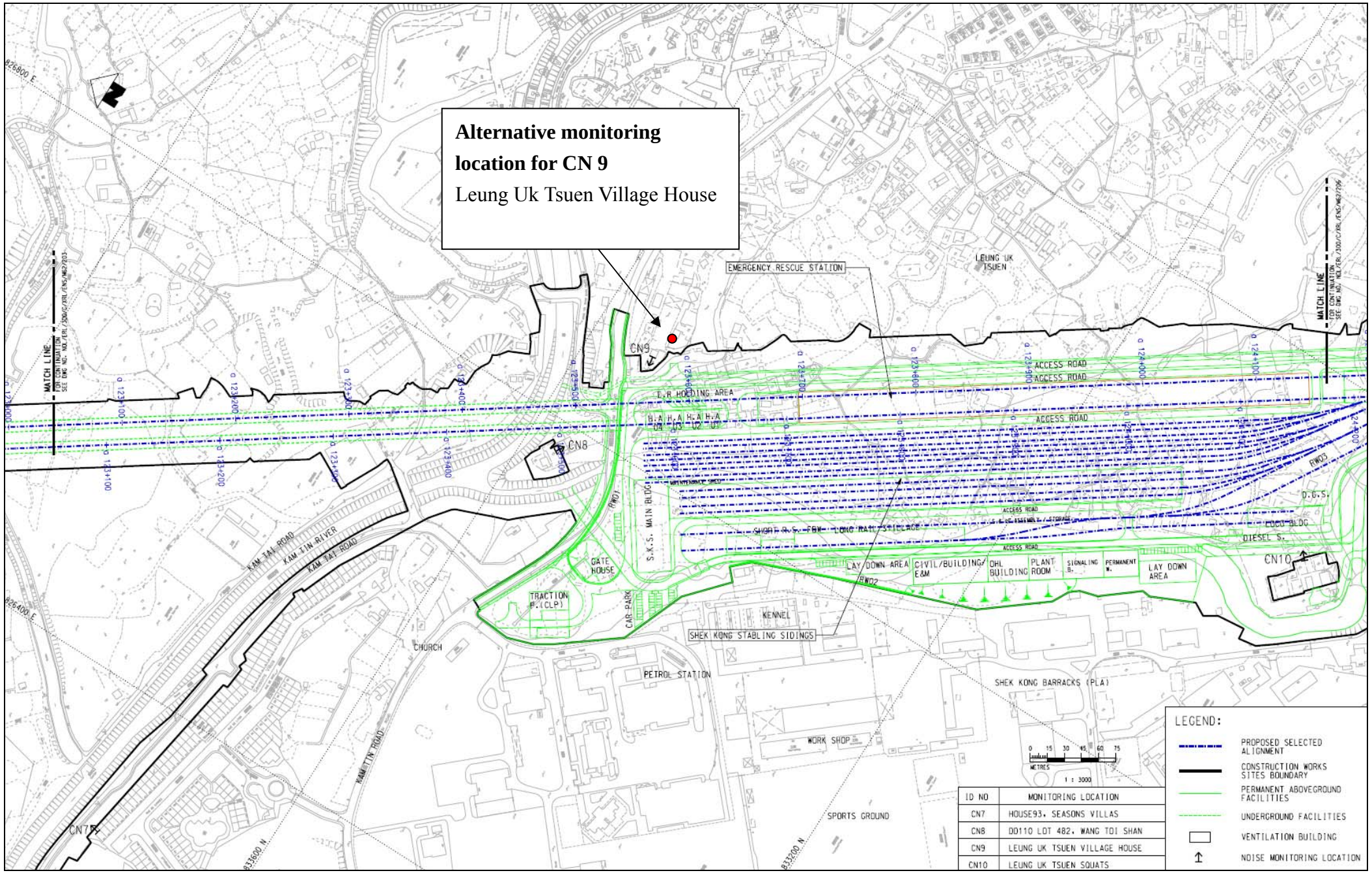
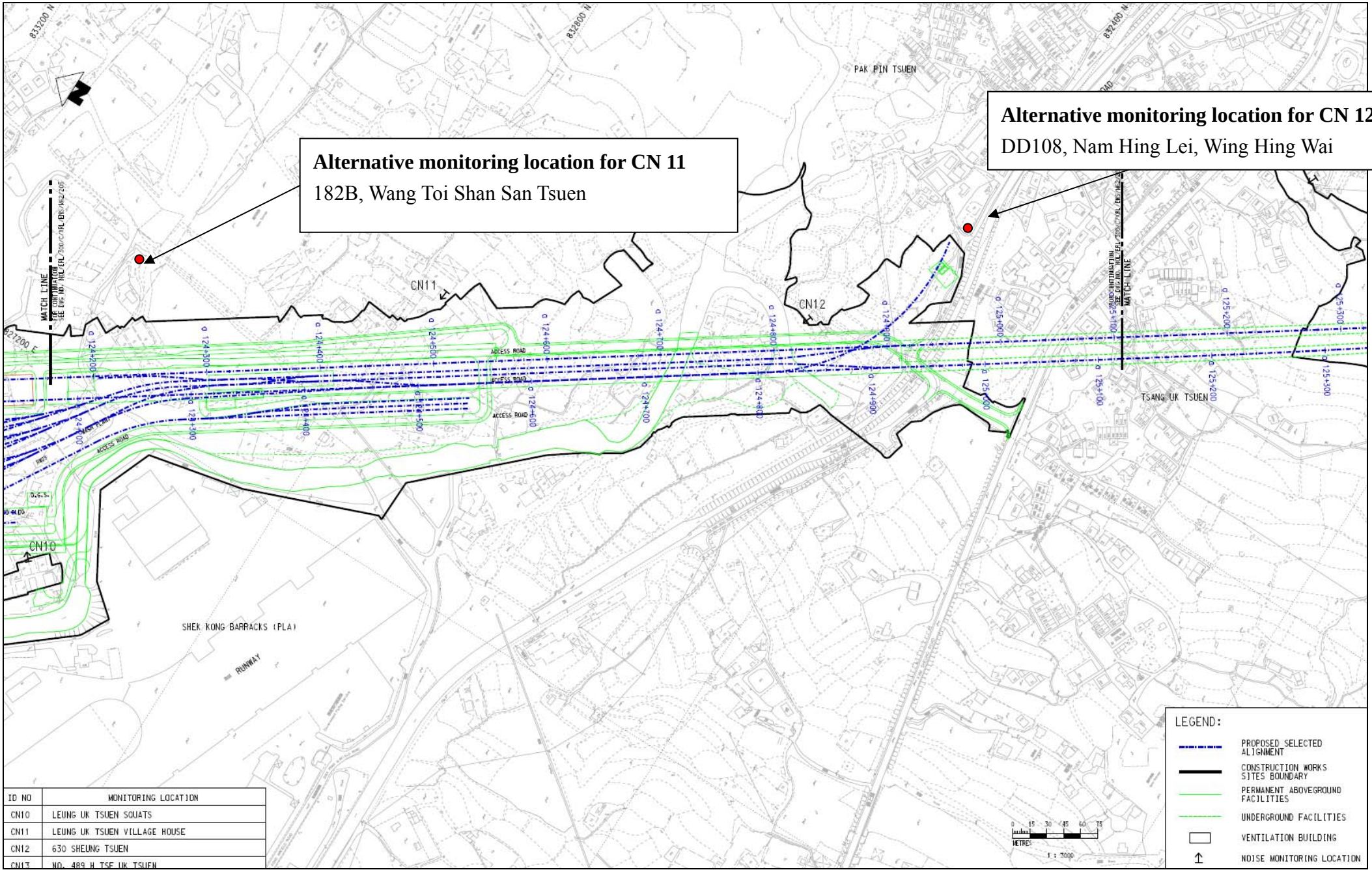
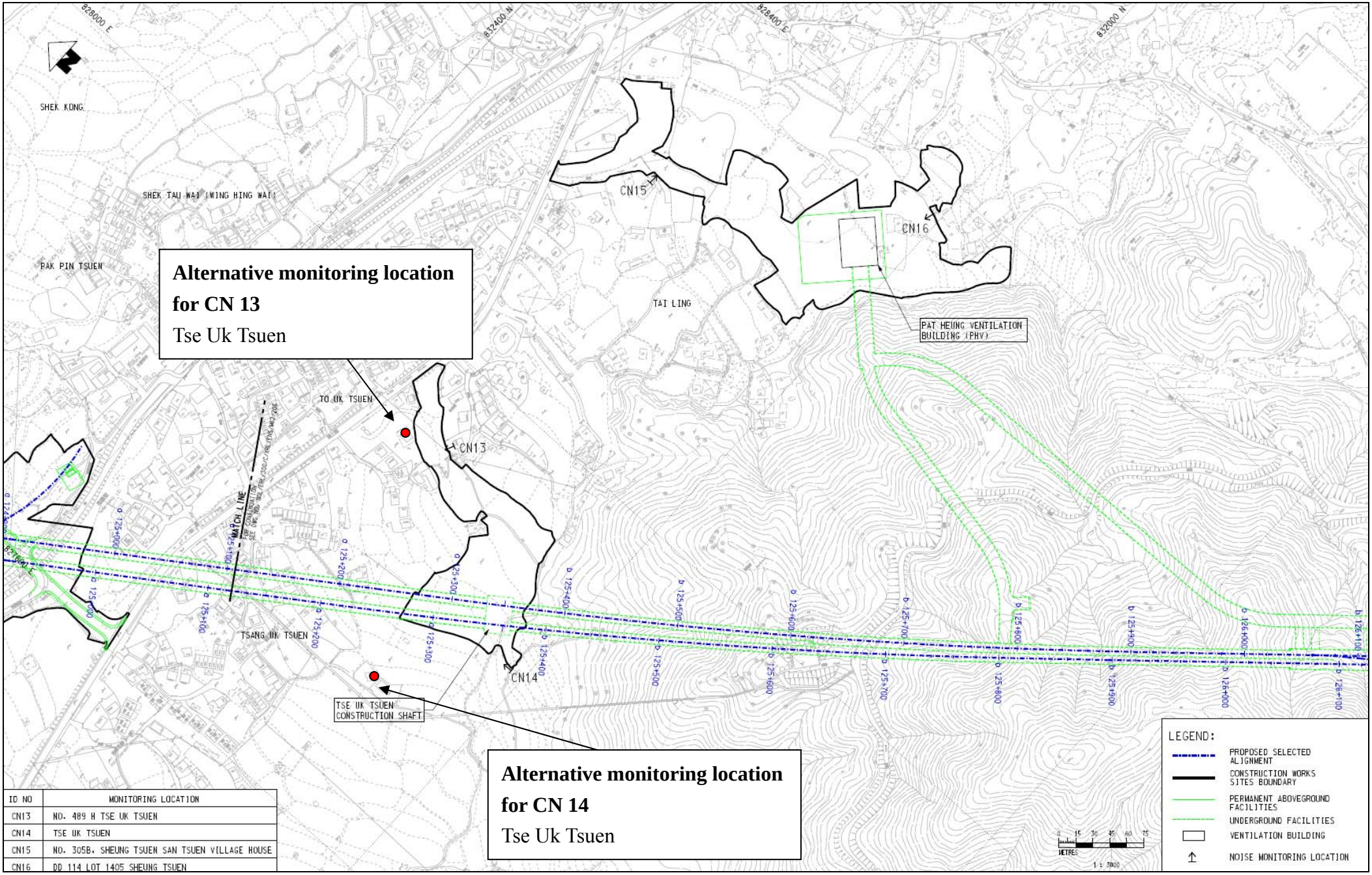


Figure 2 – Noise Monitoring Locations

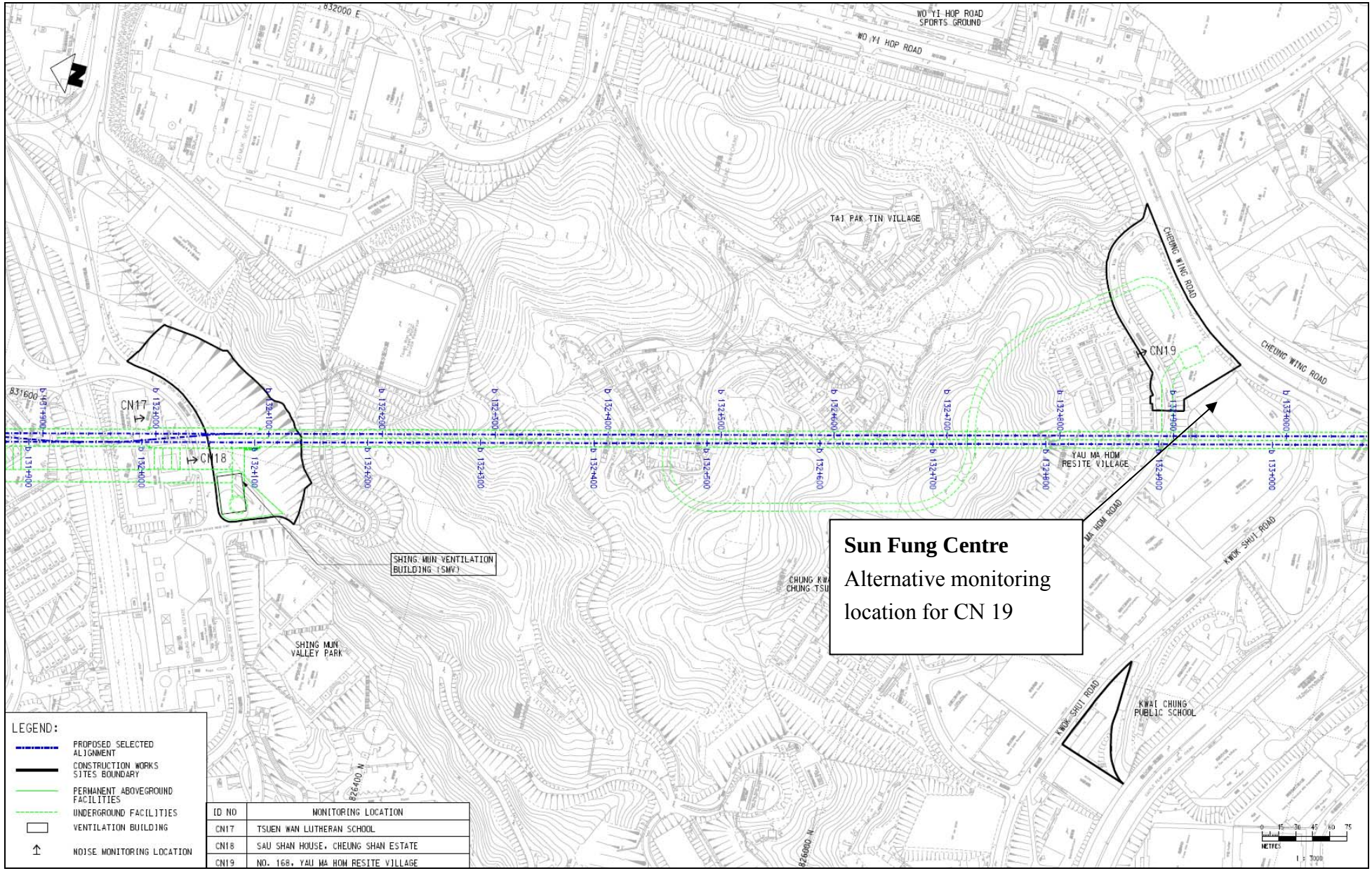

Alternative monitoring location for CN 9
Leung Uk Tsuen Village House
EMERGENCY RESCUE STATION
LEUNG UK TSUEN
CN9
CN8
CN10
CN7
E.R HOLDING AREA
ACCESS ROAD
MAINTENANCE SHED
S.K.S. MAIN BLDG
GATE HOUSE
TRACTION P.(CLP)
CAR PARK
KENNEL
SHEK KONG STABLING SIDINGS
LAY DOWN AREA
CIVIL/BUILDING E&M
OHL BUILDING
PLANT ROOM
SIGNALING B.
PERMANENT W.
LAY DOWN AREA
D.G.S.
COCO BLDG
DIESEL S.
KAM TAI ROAD
KAM TIN RIVER
KAM TIN ROAD
CHURCH
PETROL STATION
WORK SHOP
SHEK KONG BARRACKS (PLA)
SPORTS GROUND
MATCH LINE
826800 E
826400 E
833600 N
833200 N
LEGEND:
PROPOSED SELECTED ALIGNMENT
CONSTRUCTION WORKS SITES BOUNDARY
PERMANENT ABOVEGROUND FACILITIES
UNDERGROUND FACILITIES
VENTILATION BUILDING
NOISE MONITORING LOCATION
METRES
1 : 3000
ID NO | MONITORING LOCATION
CN7 | HOUSE93, SEASONS VILLAS
CN8 | DD110 LOT 482, WANG TOI SHAN
CN9 | LEUNG UK TSUEN VILLAGE HOUSE
CN10 | LEUNG UK TSUEN SQUATS



ID NO	MONITORING LOCATION
CN10	LEUNG UK TSUEN SQUATS
CN11	LEUNG UK TSUEN VILLAGE HOUSE
CN12	630 SHEUNG TSUEN
CN13	NO. 489 H TSE UK TSUEN



ID NO	MONITORING LOCATION
CN13	NO. 489 H TSE UK TSUEN
CN14	TSE UK TSUEN
CN15	NO. 305B, SHEUNG TSUEN SAN TSUEN VILLAGE HOUSE
CN16	DD 114 LOT 1405 SHEUNG TSUEN



ID NO	MONITORING LOCATION
CN17	TSUEN WAN LUTHERAN SCHOOL
CN18	SAU SHAN HOUSE, CHEUNG SHAN ESTATE
CN19	NO. 168, YAU MA HOM RESITE VILLAGE

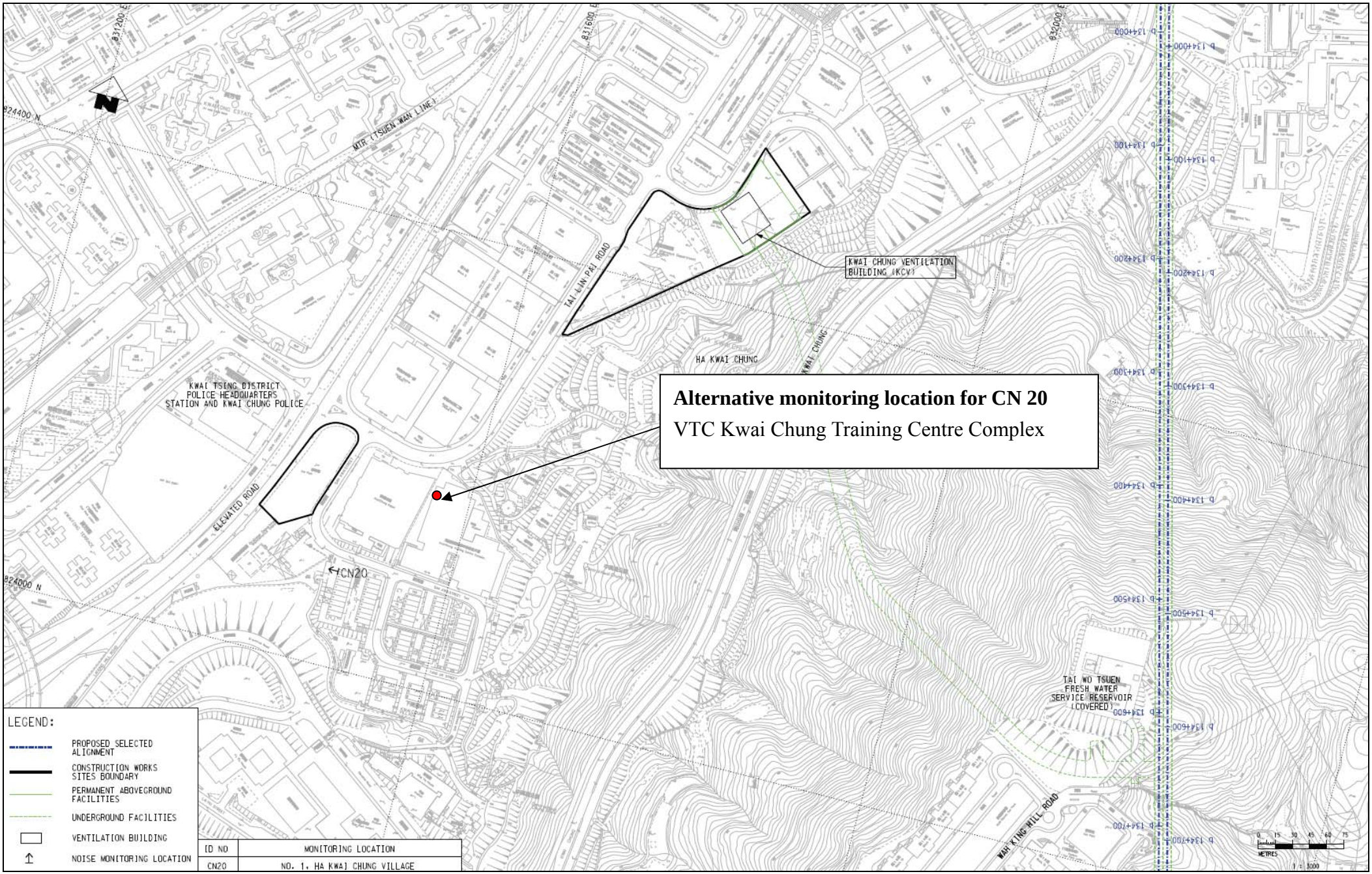
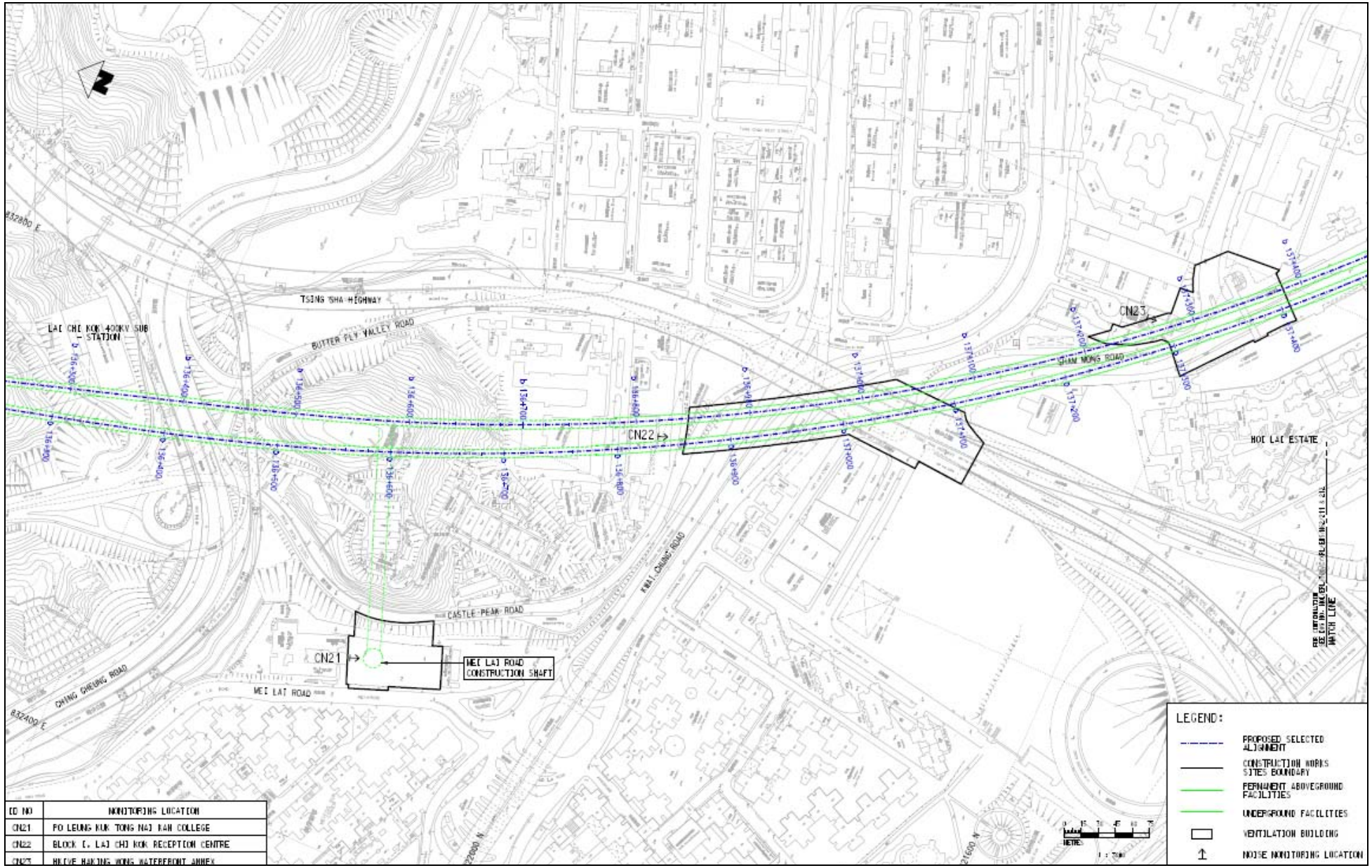
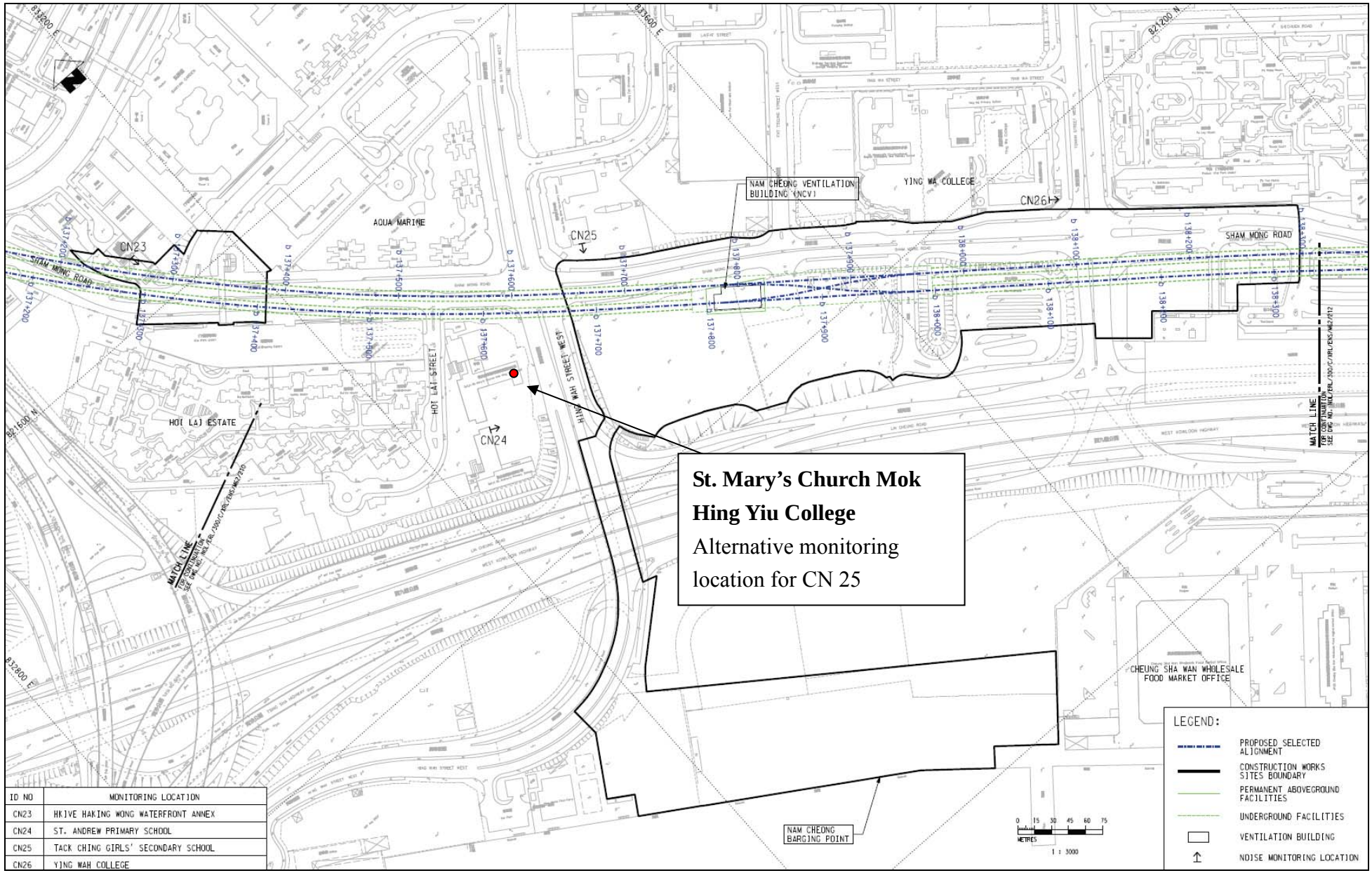


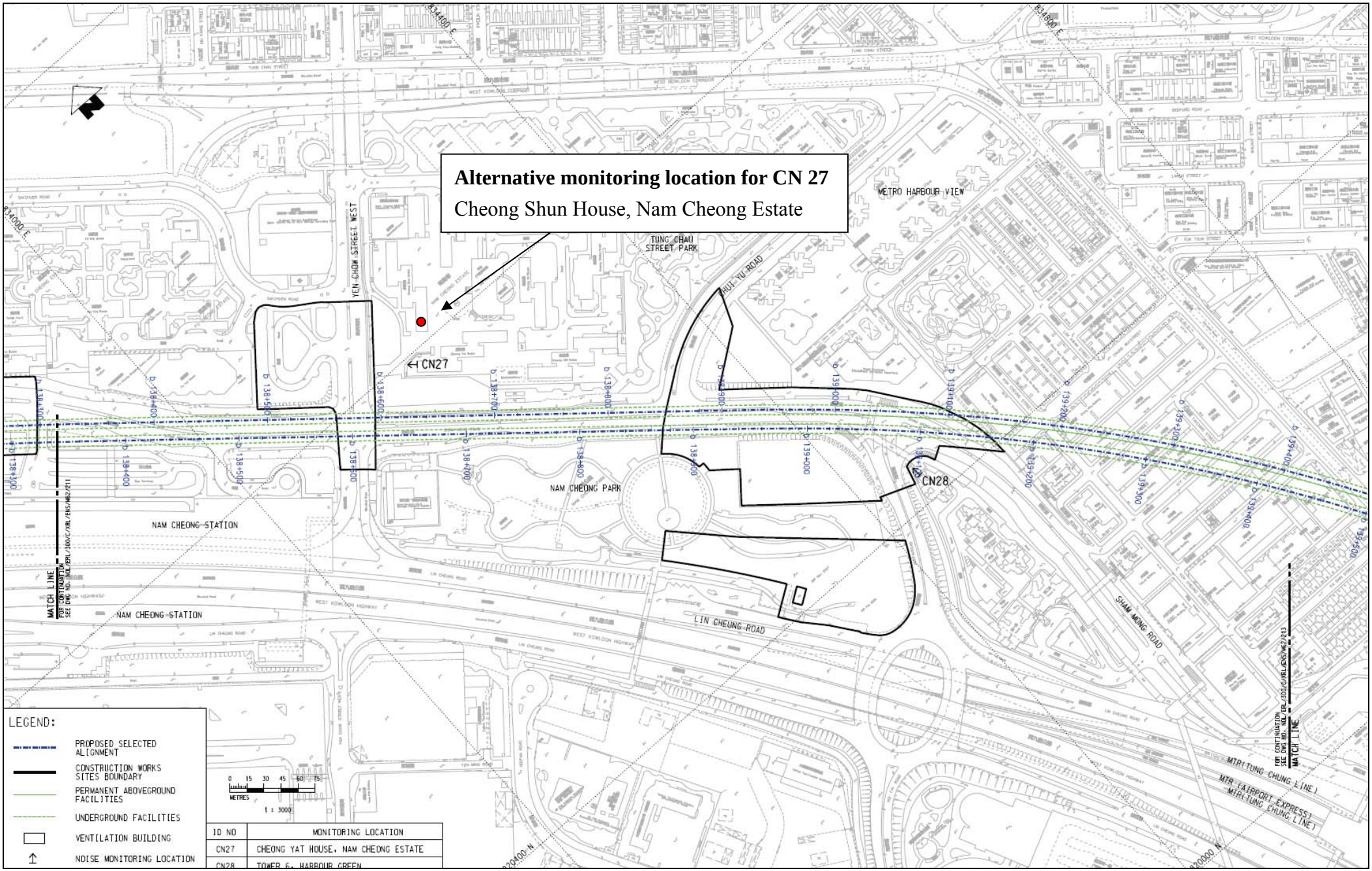
Figure 3 – Noise Monitoring Location

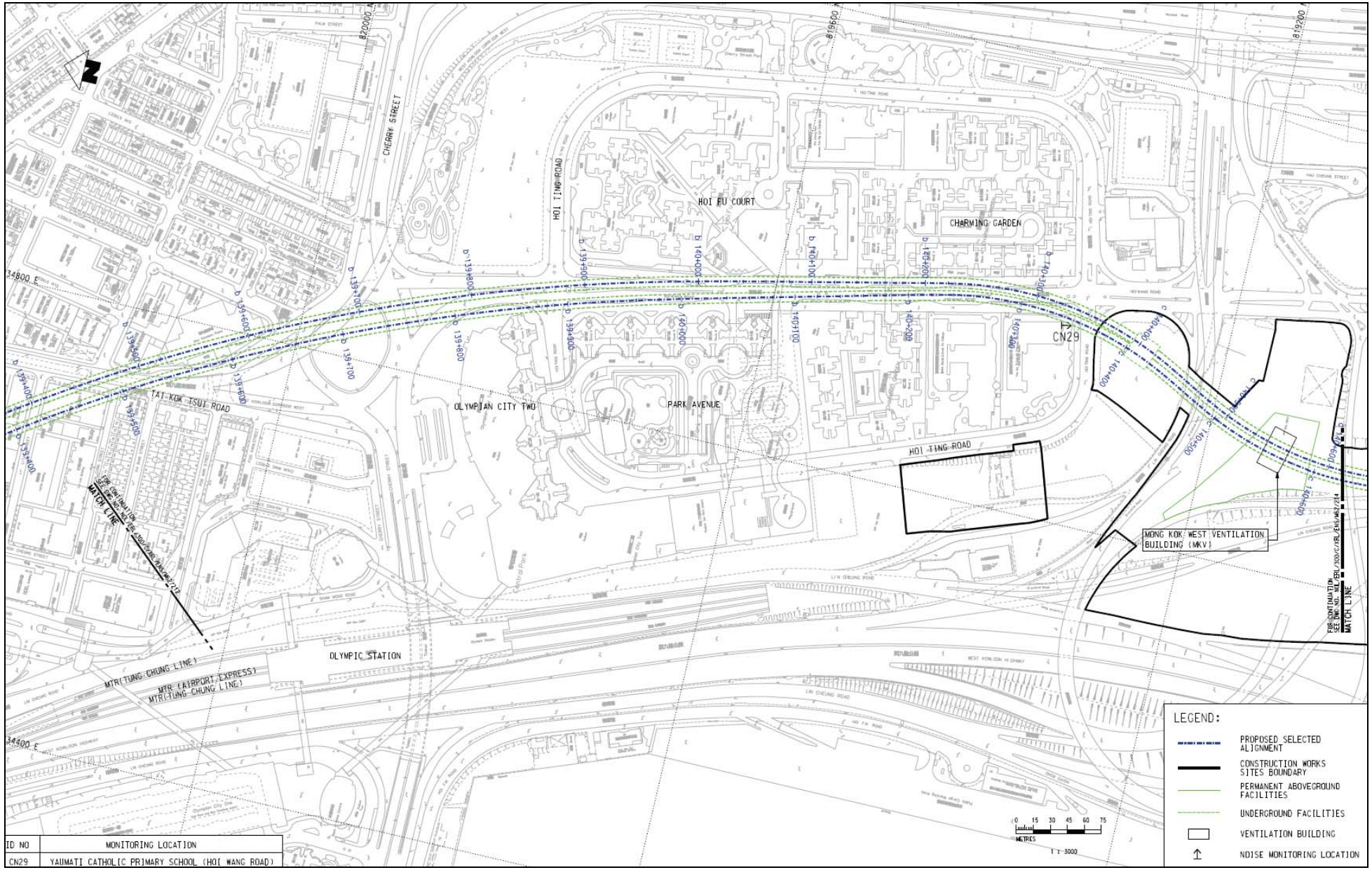


ID NO	MONITORING LOCATION
CN21	PO LEUNG KUK TONG NAI RAN COLLEGE
CN22	BLOCK C, LAI CHI KOK RECEPTION CENTRE
CN23	HOLYE HAKKING WONG WATERFRONT ANNEX

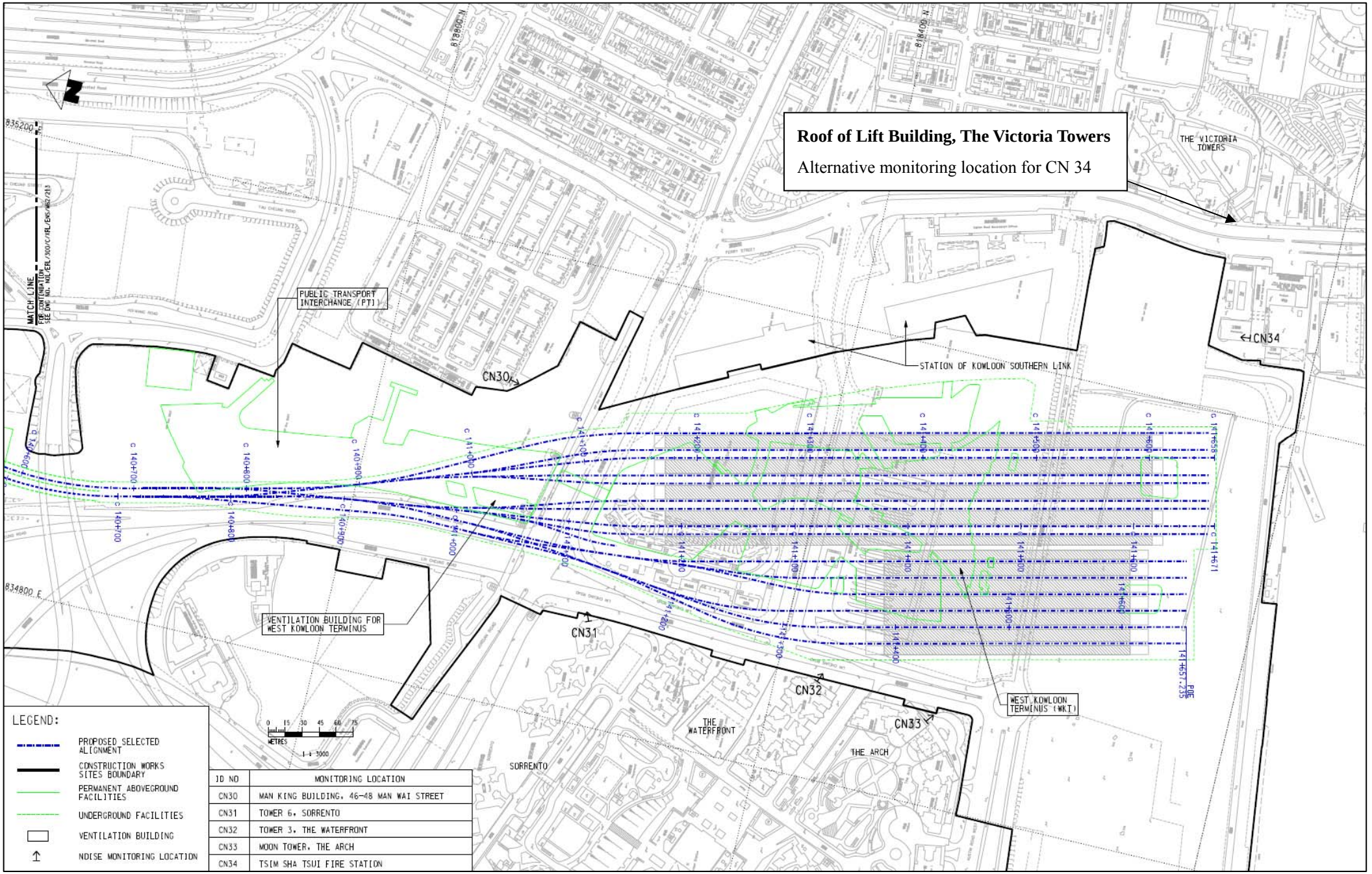


ID NO	MONITORING LOCATION
CN23	HKIVE HAKING WONG WATERFRONT ANNEX
CN24	ST. ANDREW PRIMARY SCHOOL
CN25	TACK CHING GIRLS' SECONDARY SCHOOL
CN26	YING WAH COLLEGE


Alternative monitoring location for CN 27
Cheong Shun House, Nam Cheong Estate
CN27
CN28
METRO HARBOUR VIEW
TUNG CHAU STREET PARK
YEN CHOW STREET WEST
HUI YU ROAD
NAM CHEONG PARK
NAM CHEONG STATION
NAM CHEONG STATION
LIN CHEUNG ROAD
SHAM MONG ROAD
WEST KOWLOON HIGHWAY
MATCH LINE
FOR CONTINUATION SEE DWG NO. MDL/EBL/300/C/XRL/ENS/MW2/2411
MATCH LINE
FOR CONTINUATION SEE DWG NO. MDL/EBL/300/C/XRL/ENS/MW2/2413
MTR (TUNG CHUNG LINE)
MTR (AIRPORT EXPRESS)
MTR (TUNG CHUNG LINE)
LEGEND:
PROPOSED SELECTED ALIGNMENT
CONSTRUCTION WORKS SITES BOUNDARY
PERMANENT ABOVEGROUND FACILITIES
UNDERGROUND FACILITIES
VENTILATION BUILDING
NOISE MONITORING LOCATION
0 15 30 45 60 75
METRES
1 : 3000
ID NO
MONITORING LOCATION
CN27
CHEONG YAT HOUSE, NAM CHEONG ESTATE
CN28
TOWER 6, HARBOUR GREEN

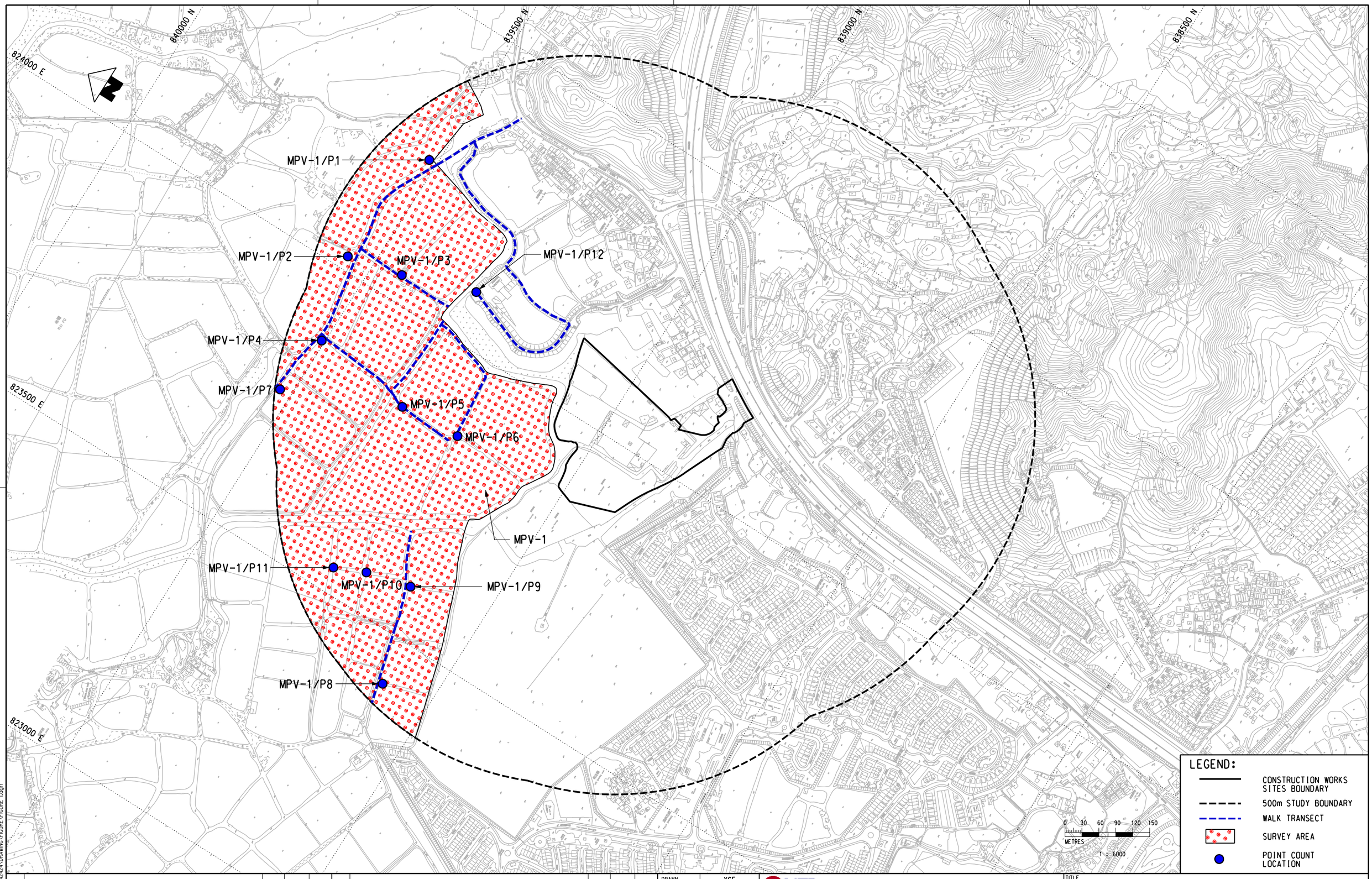


ID NO	MONITORING LOCATION
CN29	YAUMATI CATHOLIC PRIMARY SCHOOL (HOI WANG ROAD)



ID NO	MONITORING LOCATION
CN30	MAN KING BUILDING, 46-48 MAN WAI STREET
CN31	TOWER 6, SORRENTO
CN32	TOWER 3, THE WATERFRONT
CN33	MOON TOWER, THE ARCH
CN34	TSIM SHA TSUI FIRE STATION

Noise monitoring locations



REV	DESCRIPTION	BY	DATE	APPROVED

REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	XCF
DESIGNED	TWF
CHECKED	KCC
APPROVED	PL
DATE	10/OCT./2008

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ORIGINATOR

AECOM

CADD REF.
FIGURE 1.dgn

TITLE
NOL / ERL-300
BASELINE BIRD SURVEY FOR EIA
PROPOSED SURVEY AREA, POINT COUNT LOCATION AND WALK TRANSECT FOR MPV-1

SCALE	FIGURE NO.	REV.
1 : 6000 (A3)	FIGURE 1	–

PLOT DRV: r:\ustrnset\MTR\PLOTDRVER\WINDOWS\A3 COLOUR.pH
MODELNAME: Default PRINTED BY: CHENYG 2010-2-5
FILENAME: p:\PROJECTS\60042424\DRAWINGS\FIGURE 1.dgn 859947

834500 N
834000 N
833500 N
824000 E
824500 E
825000 E
825500 E

43CD-1
TPP-3/P3
TPP-3/P1
TPP-3/P2
TPP-3
TPP-2/P4
95CD
TPP-2/P3
TPP-2
TPP-2/P2
TPP-2/P1

0 30 60 90 120 150
METRES
1 : 6000

LEGEND:
- CONSTRUCTION WORKS SITES BOUNDARY
- 500m STUDY BOUNDARY
- WALK TRANSECT
- SURVEY AREA
- POINT COUNT LOCATION

PLOT DRV
MODELNAME:
FILENAME: F:\lastmod\WATER\PLOTDRV\ERWINDOWS\AS COLOUR.plt
DEFAULT
DATA\PROJECTS\60412470\DRAWING\FIGURE\FIGURE 2.dgn
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2009-11 13:51:44

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

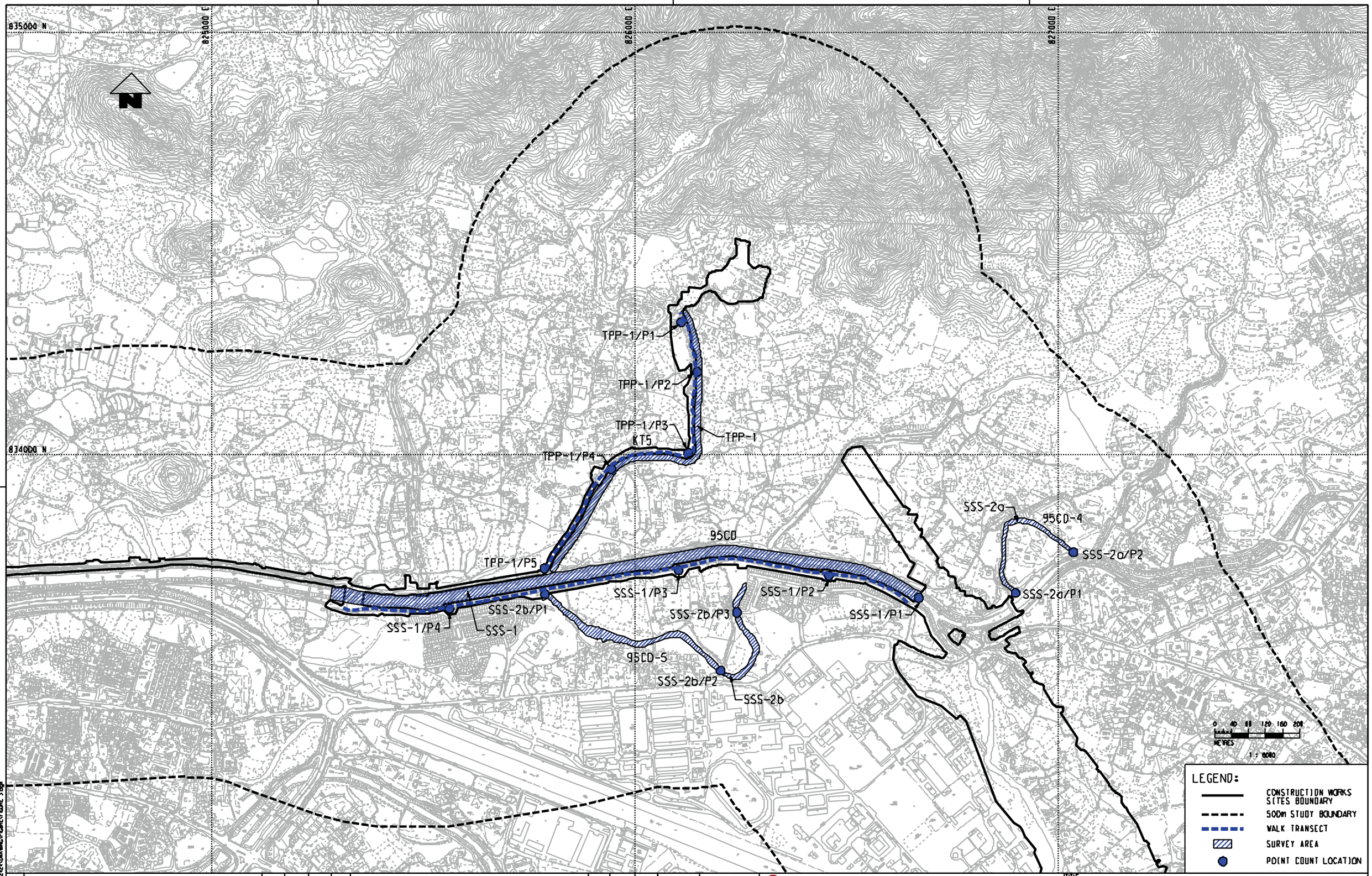
DRAWN	YJP
DESIGNED	TWF
CHECKED	KCC
APPROVED	PL
DATE	14/SEP./2009

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ORIGINATOR
AECOM
CADD REF. FIGURE 2.dgn

TITLE
NOL / ERL-300
BASELINE BIRD SURVEY FOR EIA
PROPOSED SURVEY AREA, POINT COUNT LOCATION AND WALK TRANSECT FOR TPP-2 AND TPP-3

SCALE	FIGURE NO.	REV
1 : 6000 (A3)	FIGURE 2	-



REV	DESCRIPTION	BY	DATE	APPROVED
REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	Y.JP
DESIGNED	TWF
CHECKED	K.CC
APPROVED	PL
DATE	14/SEP./2009

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ENDORSEMENT

AECOM

CADD REF FIGURE 3.dgn

TITLE

NOL / ERL-300

BASELINE BIRD SURVEY FOR EIA

PROPOSED SURVEY AREA, POINT COUNT LOCATION AND WALK TRANSECT FOR TPP-1, SSS-1,SSS-2a AND SSS-2b

SCALE 1 : 8000 (A3)

FIGURE NO. FIGURE 3

REV. -

PLOT DRW: c:\autocad\MTRYLO\DRIVER\NODEFLAS COLOUR.ctb
ADDED/MODIFIED BY: Cheryl
PLOTTED BY: 204-rm
FILENAME: P:\PROJECTS\60422\DIAGRAMS\FIGURE 3.dgn
19:13:40

827500 E
828000 E
828500 E
827000 E
833500 N
833000 N
832500 N
832000 N
831500 N

SSS-3

SSS-3/P1
SSS-3/P2
SSS-3/P3
SSS-3/P4
SSS-3/P5
SSS-3/P6
SSS-3/P7
SSS-3/P8
SSS-3/P9
SSS-3/P10
SSS-3/P11
SSS-3/P12

LEGEND:

- CONSTRUCTION WORKS SITES BOUNDARY
- 500m STUDY BOUNDARY
- WALK TRANSECT
- POINT COUNT LOCATION
- ACTIVE AGRICULTURE
- INACTIVE AGRICULTURE
- ACTIVE FISHPOND
- INACTIVE FISHPOND/POND
- REEDBED/FRESHWATER MARSH
- WATERCOURSE
- DRAINAGE CHANNEL
- GRASSLAND
- SEASONALLY WET GRASSLAND
- SECONDARY WOODLAND
- SHRUBLAND
- PLANTATION
- DEVELOPED AREA/WASTEGROUND

0 30 60 90 120 150
METRES
1 : 6000

PLOT DRV
MODELNAME
FILENAME: P:\mastmain\MTRPLOTDRIVER\WINDOWS\AS COLOUR.pltPLOTTED BY: CHWIYP 14/8/24
Default DATE: 2009-11
DATA\PROJECTS\60412621\PLOT\MRG\FIGURE\FIGURE 4.dgn

REV	DESCRIPTION	BY	DATE	APPROVED

REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	YJP
DESIGNED	TWF
CHECKED	KCC
APPROVED	PL
DATE	07/DEC./2009

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EXPRESS RAIL LINK

ORIGINATOR
AECOM

CADD REF.
FIGURE 4.dgn

TITLE
NOL / ERL-300
BASELINE BIRD SURVEY FOR EIA
PROPOSED SURVEY AREA, POINT COUNT LOCATION AND WALK TRANSECT FOR SSS-3

SCALE	FIGURE NO.	REV
1 : 6000 (A3)	FIGURE 4	-

827500 E
828000 E
828500 E
833500 N
833000 N
832500 N
832000 N
831500 N

TUW-1/P1
TUW-1/P2
TUW-1/P3
TUW-1/P4
TUW-1/P5
TUW-1/P6
TUW-1/P7
TUW-1

LEGEND:

- CONSTRUCTION WORKS SITES BOUNDARY
- 500m STUDY BOUNDARY
- WALK TRANSECT
- POINT COUNT LOCATION
- ACTIVE AGRICULTURE
- INACTIVE AGRICULTURE
- ACTIVE FISHPOND
- INACTIVE FISHPOND/POND
- REEDBED/FRESHWATER MARSH
- WATERCOURSE
- DRAINAGE CHANNEL
- GRASSLAND
- SEASONALLY WET GRASSLAND
- SECONDARY WOODLAND
- SHRUBLAND
- PLANTATION
- DEVELOPED AREA/WASTEGROUND

0 30 60 90 120 150
METRES
1 : 6000

PLOT DRV: P:\ustmaan\MTRPLOTDRIVER\WIN00RSV.AS COLOUR.pltr
MODELNAME: Default
PLTCHANGE: DATA\PROJECTS\60412621\PLOT\MXD\FIGURE 5.MXD
PLOTTED BY: CHWIYU 2009-11 14:54:44

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	YJP
DESIGNED	TWF
CHECKED	KCC
APPROVED	PL
DATE	07/DEC./2009

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EXPRESS RAIL LINK

ORIGINATOR: AECOM

CADD REF.: FIGURE 5.dgn

TITLE
NOL / ERL-300
BASELINE BIRD SURVEY FOR EIA
PROPOSED SURVEY AREA, POINT COUNT LOCATION AND WALK TRANSECT FOR TUW-1

SCALE	FIGURE NO.	REV
1 : 6000 (A3)	FIGURE 5	-

826000 E
827000 E
828000 E
829000 E
832000 N
833000 N
831000 N

TUW-2 and PHV-1/P2

TUW-2 and PHV-1/P1

TUW-2 AND PHV-1

LEGEND:

- CONSTRUCTION WORKS SITES BOUNDARY
- 500m STUDY BOUNDARY
- WALK TRANSECT
- SURVEY AREA
- POINT COUNT LOCATION

0 40 80 120 160 200
METRES
1 : 8000

REV	DESCRIPTION	BY	DATE	APPROVED
REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	CYG
DESIGNED	TWF
CHECKED	KCC
APPROVED	PL
DATE	07/DEC./2009

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EXPRESS RAIL LINK

ORIGINATOR

AECOM

CADD REF FIGURE 6.dgn

TITLE

NOL / ERL-300

BASELINE BIRD SURVEY FOR EIA

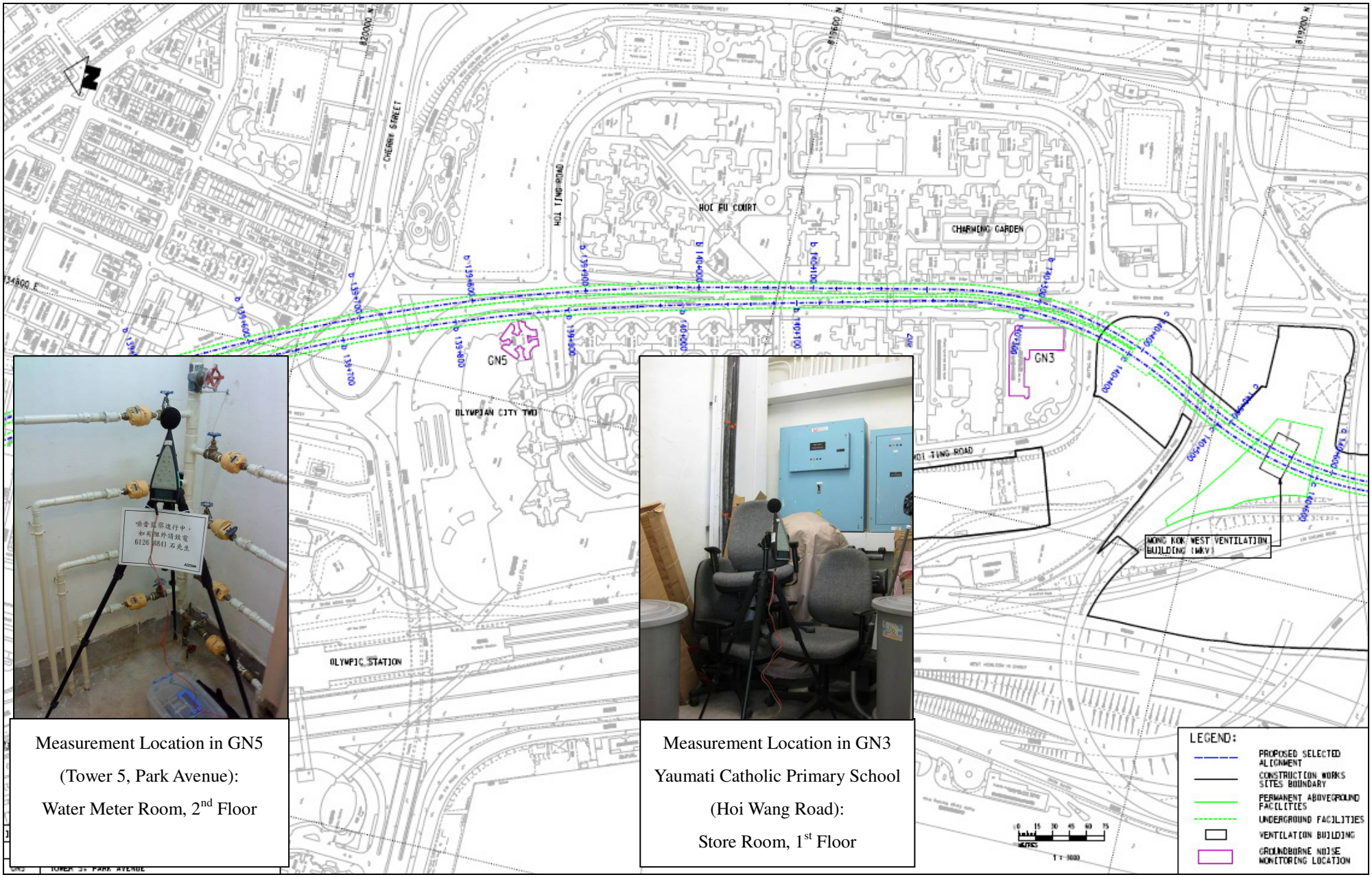
PROPOSED SURVEY AREA, POINT COUNT LOCATION AND WALK TRANSECT FOR TUW-2 AND PHV-1

SCALE 1 : 8000 (A3)

FIGURE NO. FIGURE 6

REV. -

PLOT DWG: r:\submit\MTR\PLOTDRWG\WORDFILE\A3 COLOR.pdf
MODIFIED BY: Derfun
FILENAME: P:\PROJECTS\60042210\DRAWING\FIGURE 6.dgn
PLOTTED BY: TANG
2009-12
H:304



Measurement Location in GN5

(Tower 5, Park Avenue):

Water Meter Room, 2nd Floor

Measurement Location in GN3

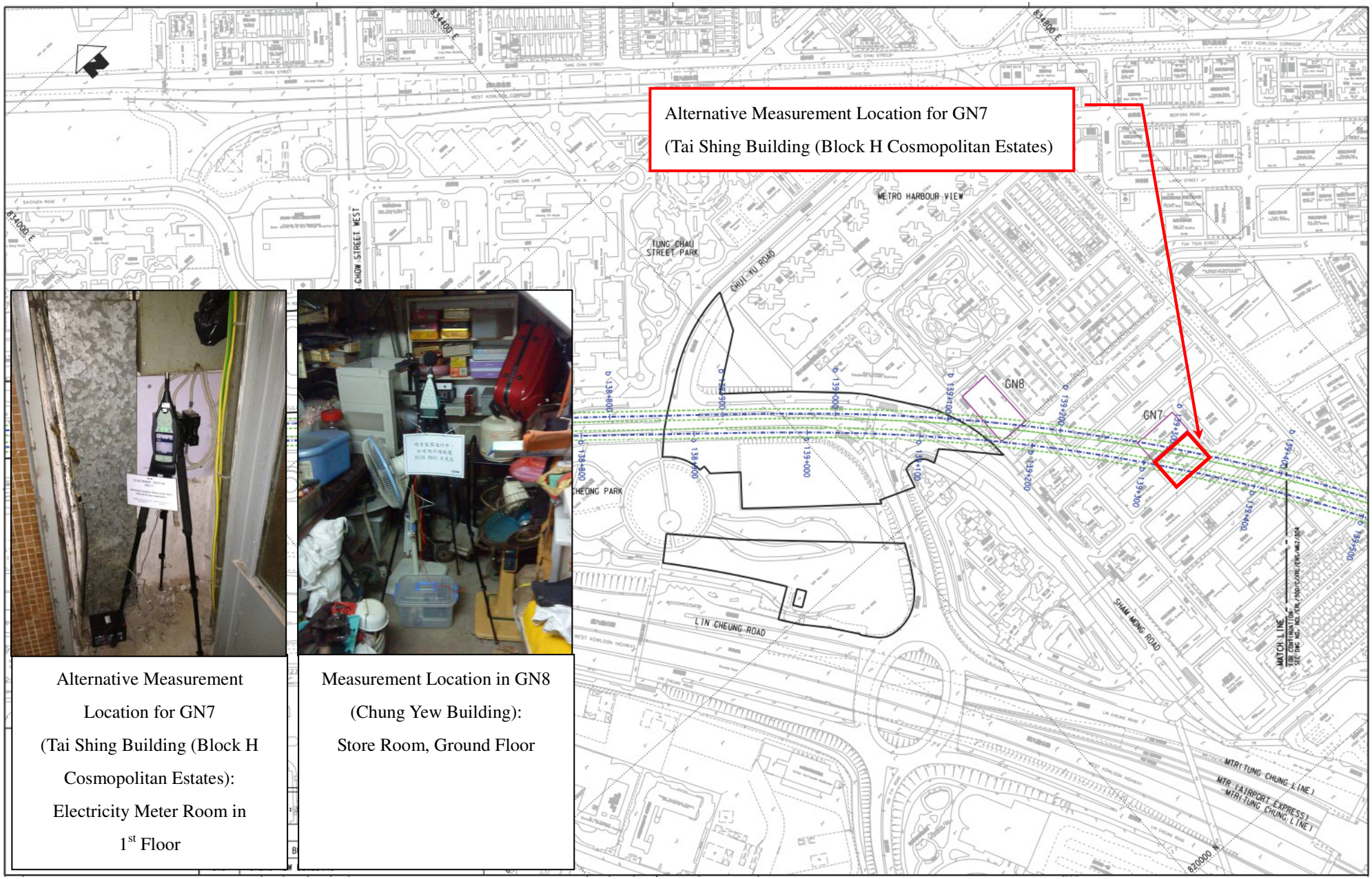
Yaumati Catholic Primary School

(Hoi Wang Road):

Store Room, 1st Floor

Appendix D - Ground-borne Noise Monitoring Locations

Remarks: All measurement locations are located approximately at the centre of the room.



Alternative Measurement Location for GN7 (Tai Shing Building (Block H Cosmopolitan Estates): Electricity Meter Room in 1st Floor

Measurement Location in GN8 (Chung Yew Building): Store Room, Ground Floor

Appendix D - Ground-borne Noise Monitoring Locations

Remarks: All measurement locations are located approximately at the centre of the room.

Alternative Measurement Location for GN31

(Village house, Wang Toi Shan)



Measurement Location in GN31

(Village house, Wang Toi Shan):

Appendix D - Ground-borne Noise Monitoring Locations

Remarks: All measurement locations are located approximately at the centre of the room.

Appendix E

Environmental Quality Performance Limits

Action and Limits Levels for 24-hour TSP

Monitoring Station	Location	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
AM 1	Mai Po San Tsuen	217.4	260
AM 2	Yau Tam Mei Village House	179.4	260
AM 3	Kong Tai Road Village House	154.7	260
AM 4	DD110 LOT 482, Wang Toi Shan	148.6	260
AM 5	Leung Uk Tsuen Squats	152.0	260
AM 6	630 Sheung Tsuen	145.6	260
AM 7	Tse Uk Tsuen	149.8	260
AM 8	No. 305B, Sheung Tsuen San Tsuen Village House	158.2	260
AM 9	Sau Shan House, Cheung Shan Estate	171.2	260
AM 10	Yau Ma Hom Resite Village	174.8	260
AM 11	Chung Shun Knitting Centre	160.3	260
AM 12	Po Leung Kuk Tong Nai Kan College	162.5	260
AM 13	St. Andrew Primary School	180.3	260
AM 14	Yaumati Catholic Primary School	158.2	260
AM 15	Between Sorrento and The Waterfront	168.8	260
AM 16	Tower 3, The Waterfront	155.9	260
AM 17	The Victoria Towers	179.3	260

Action and Limits Levels for 1-hour TSP (for complaint handling)

Monitoring Station	Location	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
AM 1	Mai Po San Tsuen	317.0	500
AM 2	Yau Tam Mei Village House	320.9	500
AM 3	Kong Tai Road Village House	301.9	500
AM 4	DD110 LOT 482, Wang Toi Shan	307.2	500
AM 5	Leung Uk Tsuen Squats	308.8	500
AM 6	630 Sheung Tsuen	288.1	500
AM 7	Tse Uk Tsuen	293.2	500
AM 8	No. 305B, Sheung Tsuen San Tsuen Village House	305.2	500
AM 9	Sau Shan House, Cheung Shan Estate	302.0	500
AM 10	Yau Ma Hom Resite Village	320.3	500
AM 11	Chung Shun Knitting Centre	300.6	500
AM 12	Po Leung Kuk Tong Nai Kan College	304.4	500
AM 13	St. Andrew Primary School	311.3	500
AM 14	Yaumati Catholic Primary School	303.3	500
AM 15	Between Sorrento and The Waterfront	298.4	500
AM 16	Tower 3, The Waterfront	295.6	500
AM 17	The Victoria Towers	319.4	500

Action and Limits Levels for Construction Noise

Time Period	Action Level	Limit Level, $L_{eq(30min)}$, dB(A)
0700-1900 hours on normal weekdays	When one documented complaint is received	75 dB(A) for residential premises
		70 dB(A) for school and 65 dB(A) during examination period

Appendix F

Event Action Plans

Event and Action Plan for Air Quality Monitoring

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

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
	propose remedial measures; 2. Inform IEC, 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.	2. Check Contractor's working method; 3. Discuss with ET and ER (together with the Contractor) on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	further exceedance; 2. Submit proposals for remedial actions to ER with a copy to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and 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 exceedance 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 ER with a copy to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Revise and 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.

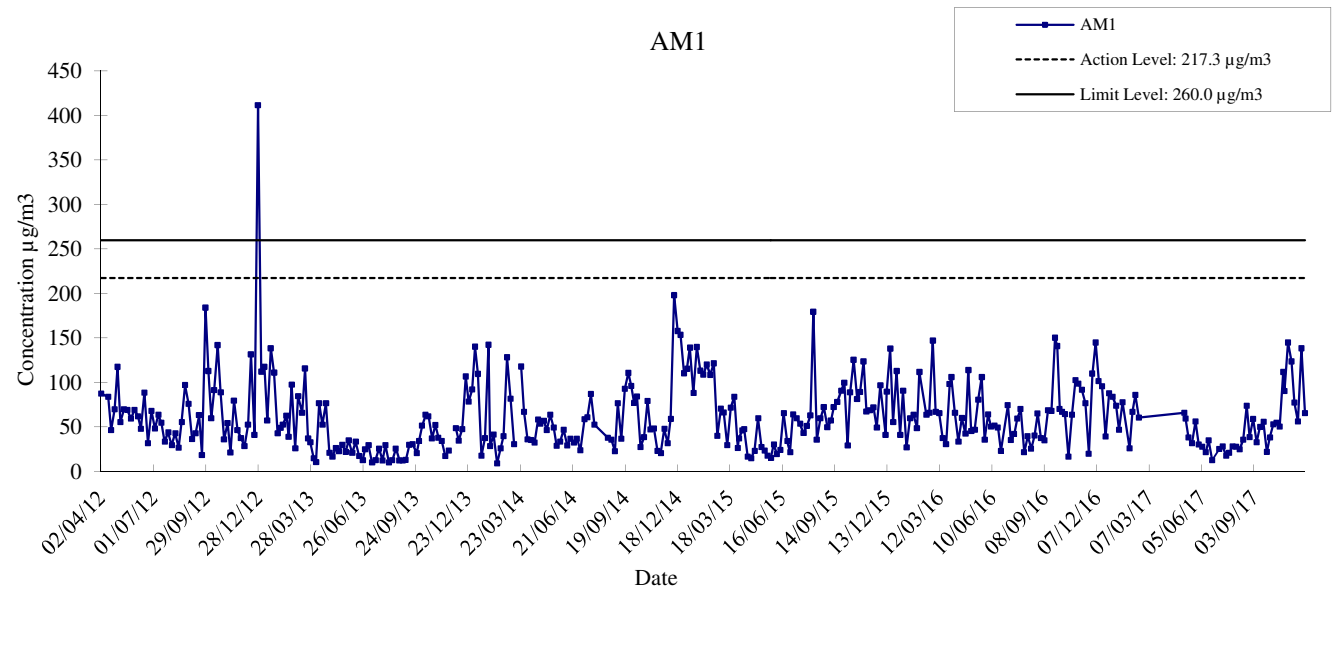
Event and Action Plan for Construction Noise Monitoring

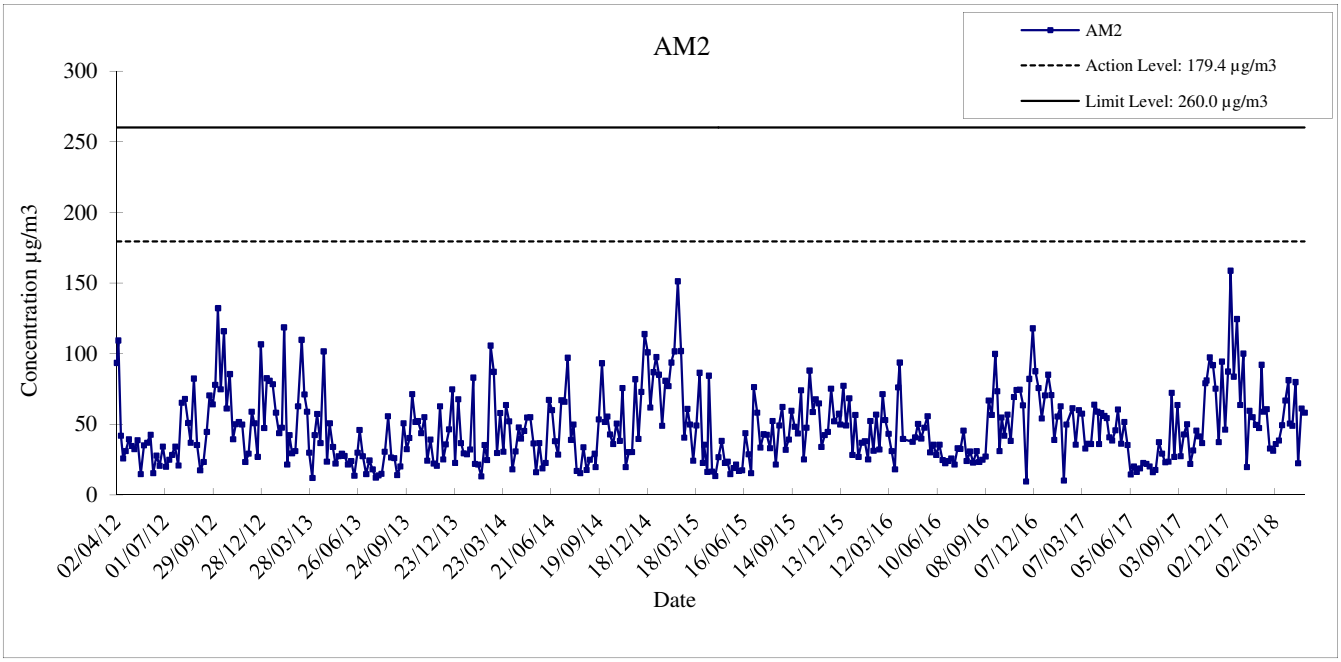
EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
Action Level	1. Notify IEC, ER and Contactor 2. Carry out investigation 3. Report the results of investigation to the IEC, ER and Contactor 4. Discuss jointly with the ER and Contractor and formulate remedial measures 5. Increase monitoring frequency 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 ER with copy to IEC and ET 2. Implement noise mitigation proposals
Limit Level	1. Notify IEC, ER, EPD and Contractor 2. Identify source 3. Repeat measurement 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, EPD the causes and actions taken for the exceedances 7. Assess effectiveness of	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. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to ER with copy to IEC and ET 3. Implement the agreed proposals 4. Revise and resubmit proposals if problem still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance is

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Limit Level	Contractor's remedial actions and keep IEC, EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring		portion of work until the exceedance is abated	abated

Appendix G

Graphical Plots of Impact Monitoring Results (Air Quality)



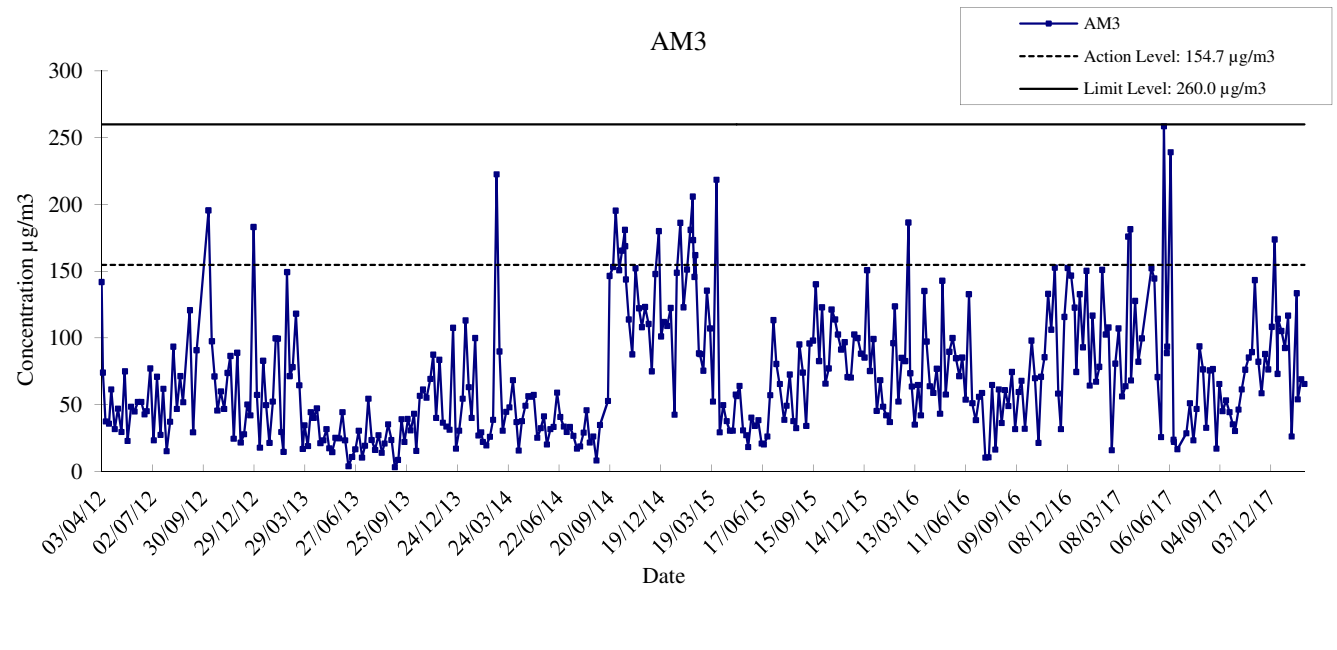


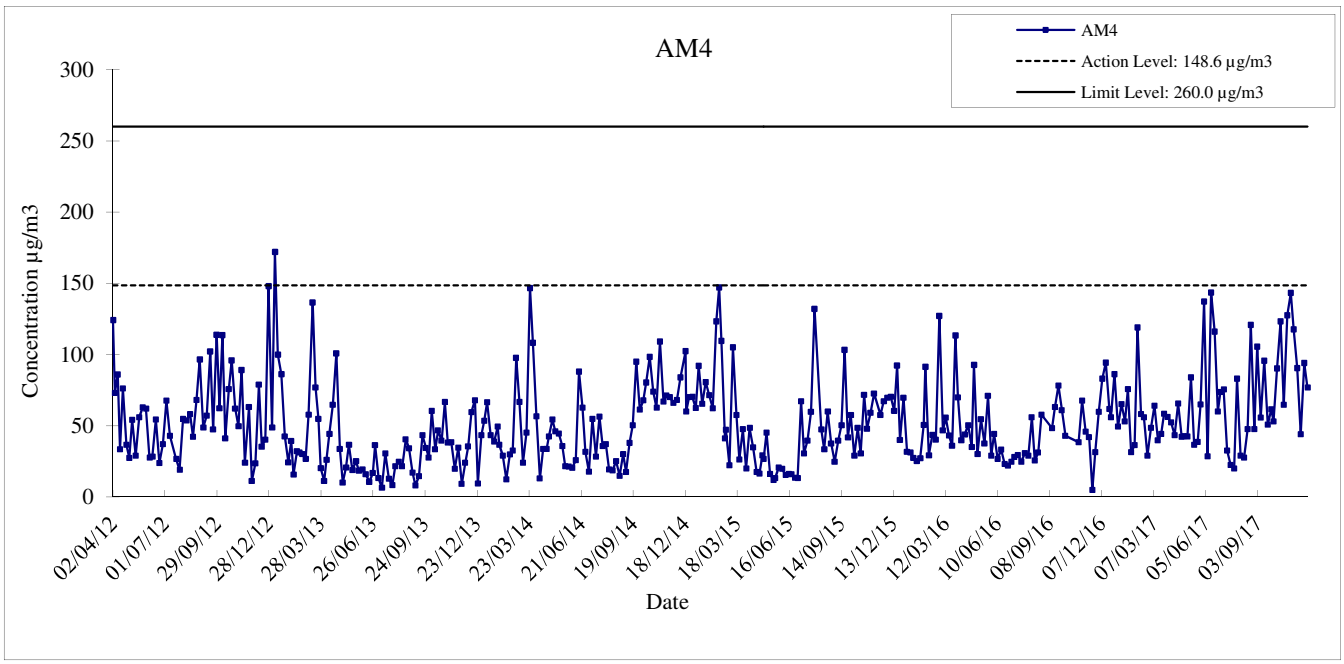
Annotation

Major Construction Activities:
a. Sheet Piling and Excavation (July 2011 - Aug 2012)
b. Utilities diversion and re-construction (Aug 2012 - Dec 2015)
c. Road diversion and underpass construction (Feb 2013 - Dec 2017)
d. Surface laying and Road markings (Oct 2017 - Sep 2018)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of 24-hour TSP Monitoring Result for Location AM1 and AM2**	**Date**	**2010 - 2018**
		APPENDIX	**G**



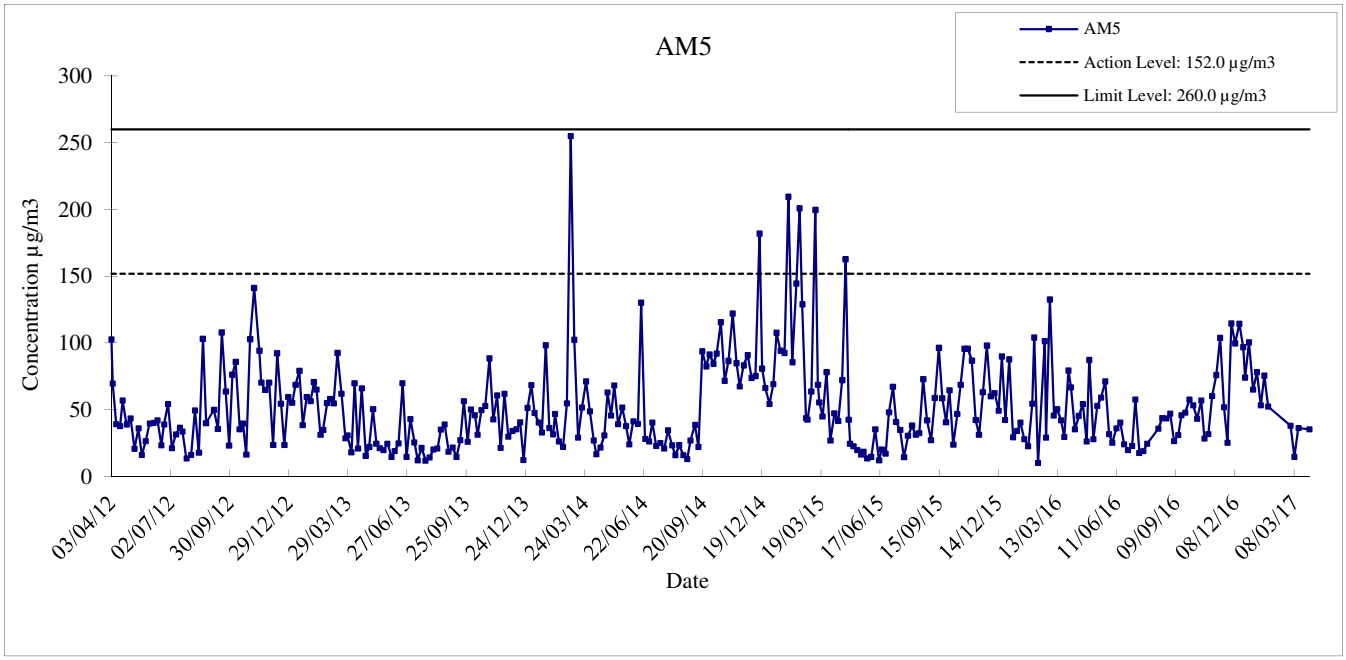


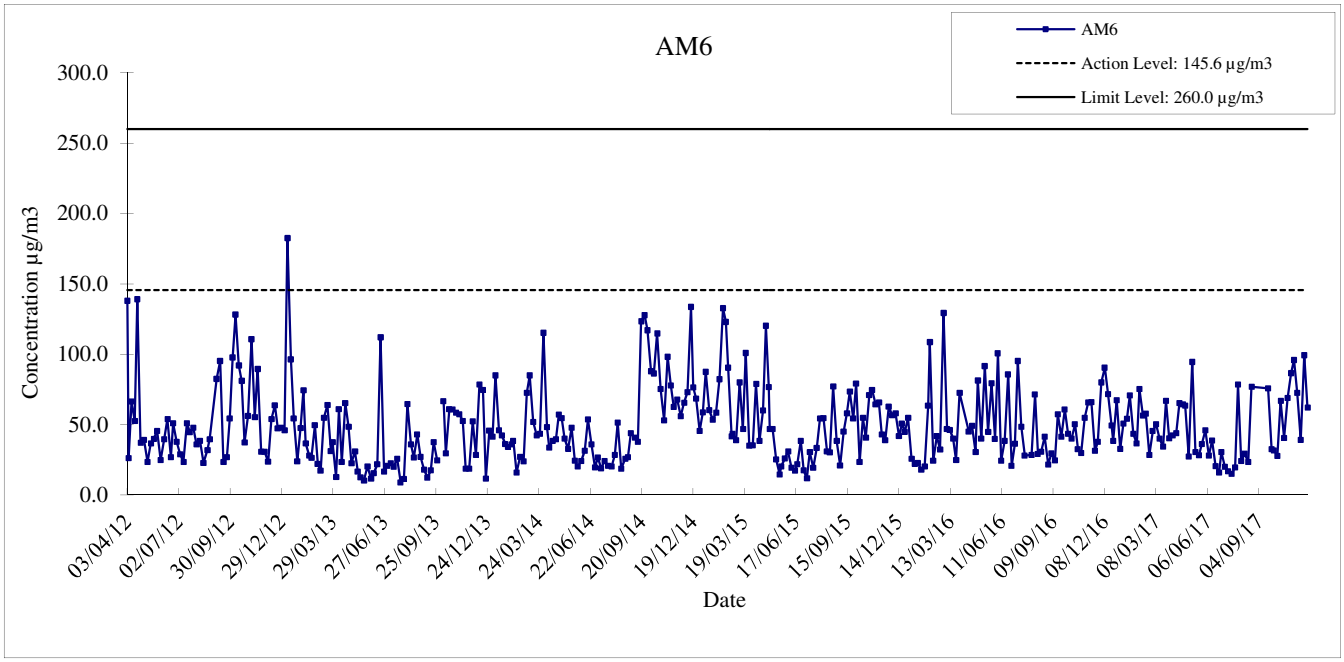
Annotation

Major Construction Activities:
a. Sheet Piling and Excavation (July 2011 - Aug 2012)
b. Utilities diversion and re-construction (Aug 2012 - Dec 2015)
c. Road diversion and underpass construction (Feb 2013 - Dec 2017)
d. Surface laying and Road markings (Oct 2017 - Sep 2018)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of 24-hour TSP Monitoring Result for Location AM3 and AM4**	**Date**	**2010 - 2018**
		APPENDIX	**G**



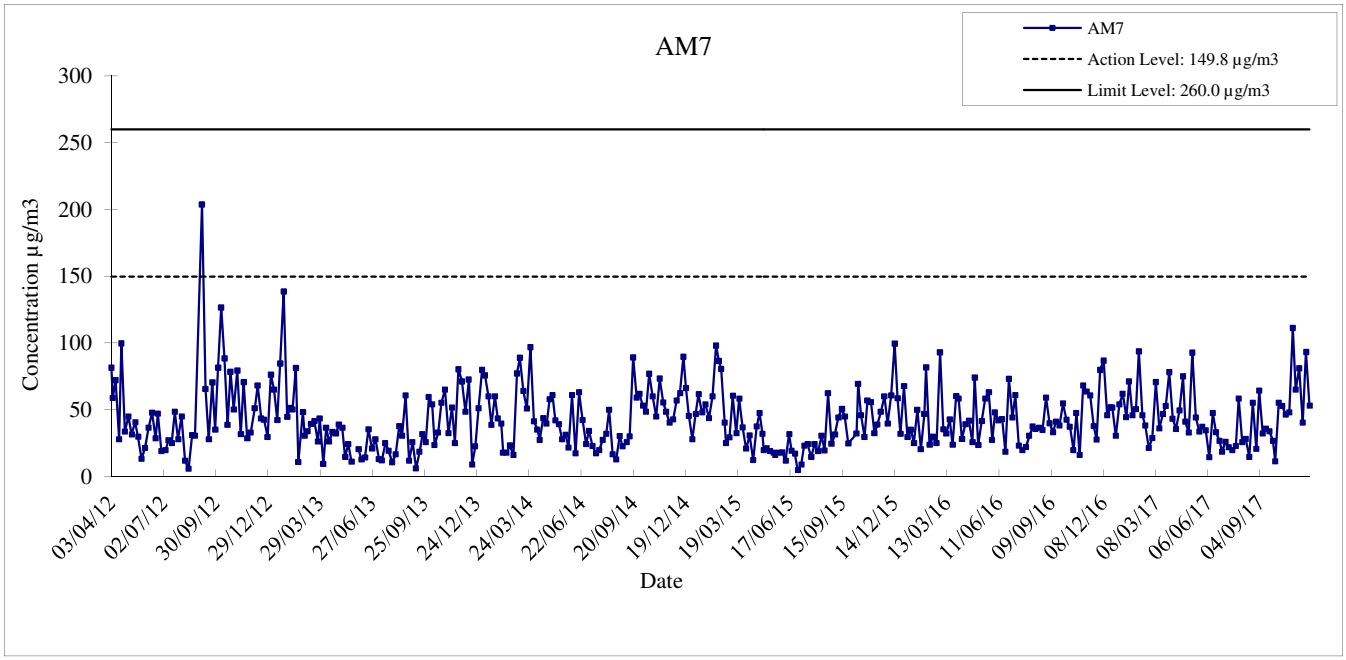


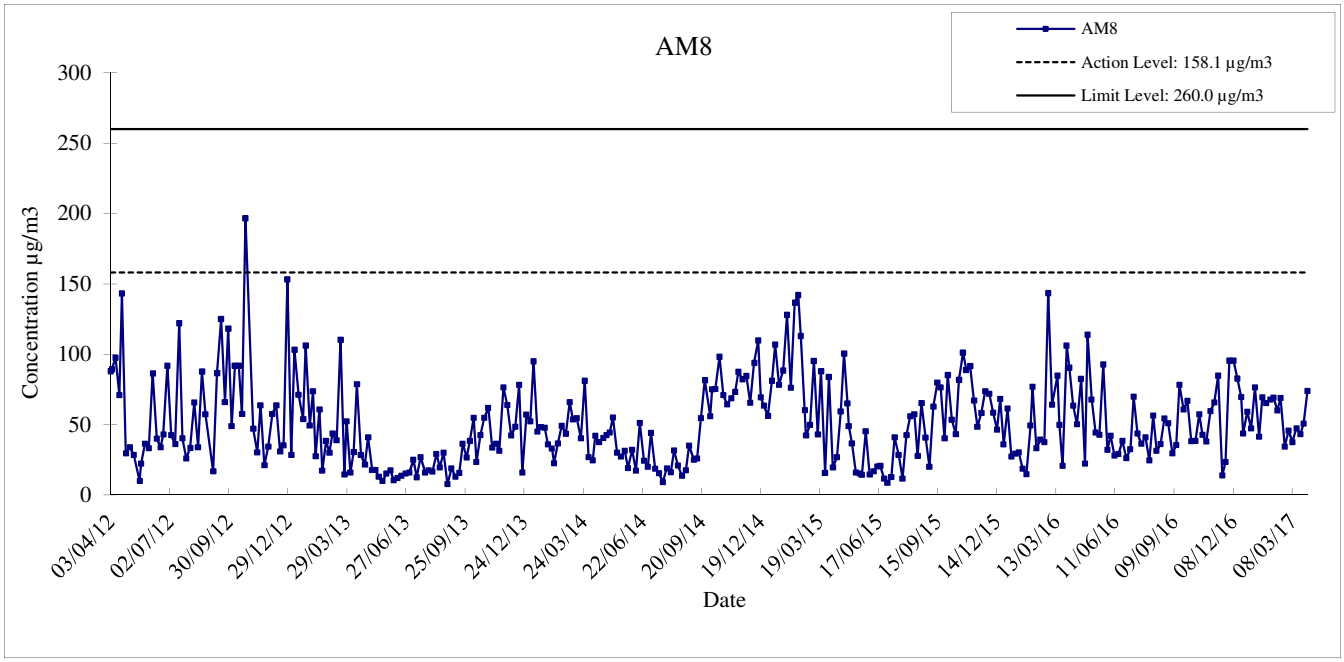
Annotation

Major Construction Activities:
a. Sheet Piling and Excavation (July 2011 - Aug 2012)
b. Utilities diversion and re-construction (Aug 2012 - Dec 2015)
c. Road diversion and underpass construction (Feb 2013 - Dec 2017)
d. Surface laying and Road markings (Oct 2017 - Sep 2018)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of 24-hour TSP Monitoring Result for Location AM5 and AM6**	**Date**	**2010 - 2018**
		APPENDIX	**G**



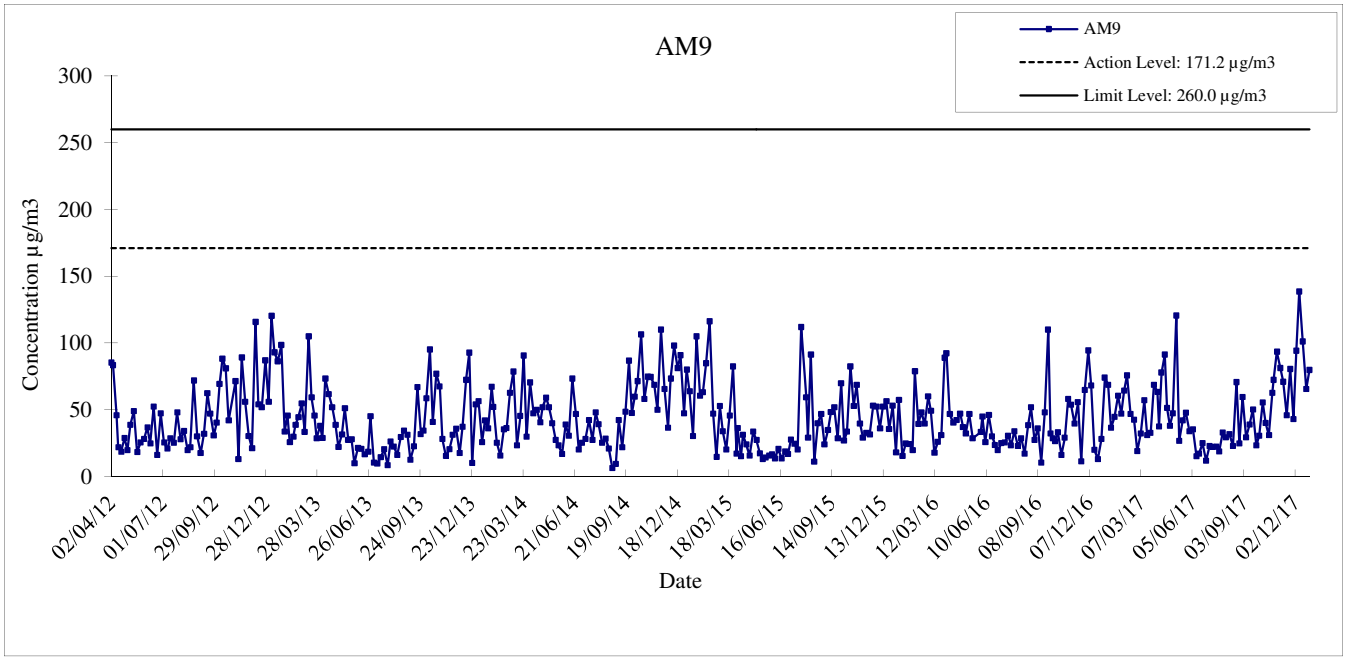


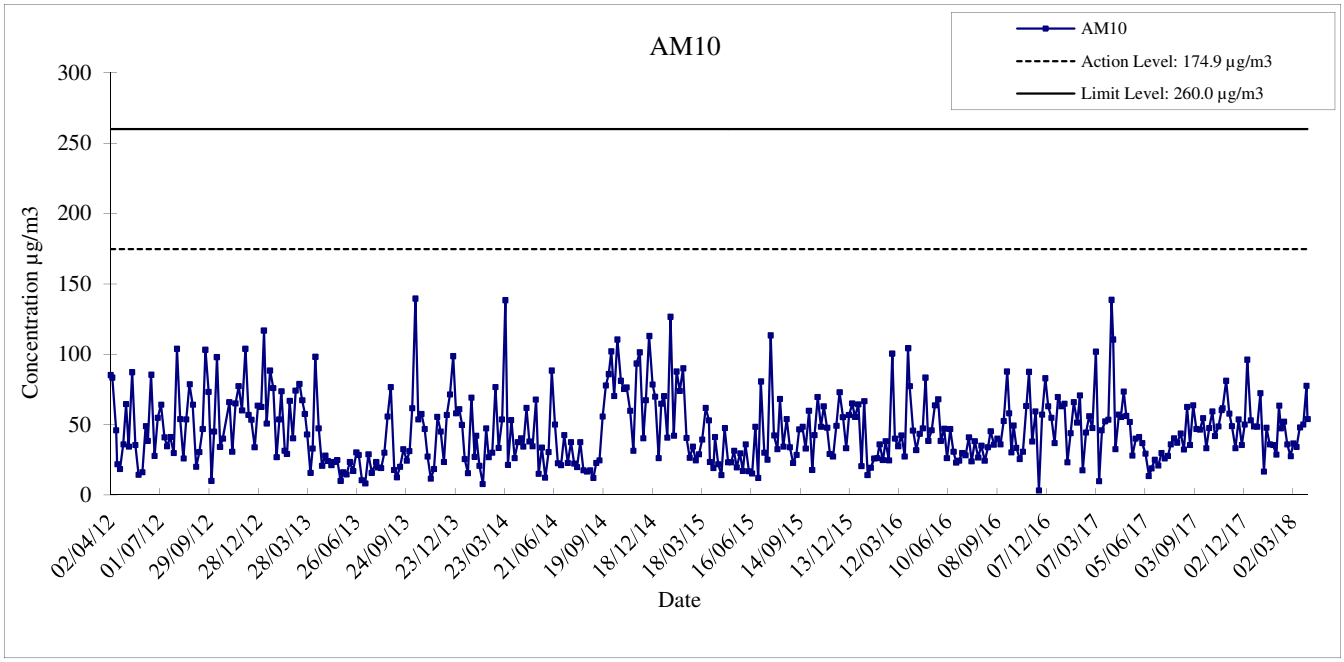
Annotation

Major Construction Activities:
a. Sheet Piling and Excavation (July 2011 - Aug 2012)
b. Utilities diversion and re-construction (Aug 2012 - Dec 2015)
c. Road diversion and underpass construction (Feb 2013 - Dec 2017)
d. Surface laying and Road markings (Oct 2017 - Sep 2018)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of 24-hour TSP Monitoring Result for Location AM7 and AM8**	**Date**	**2010 - 2018**
		APPENDIX	**G**



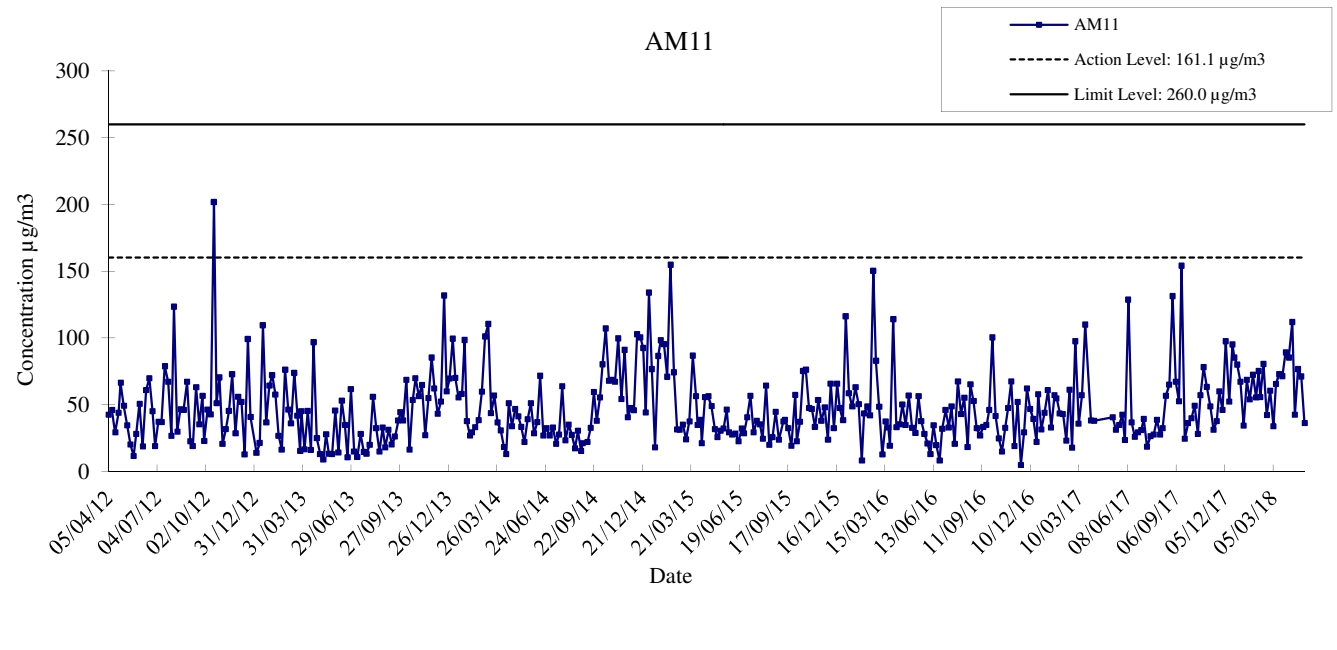


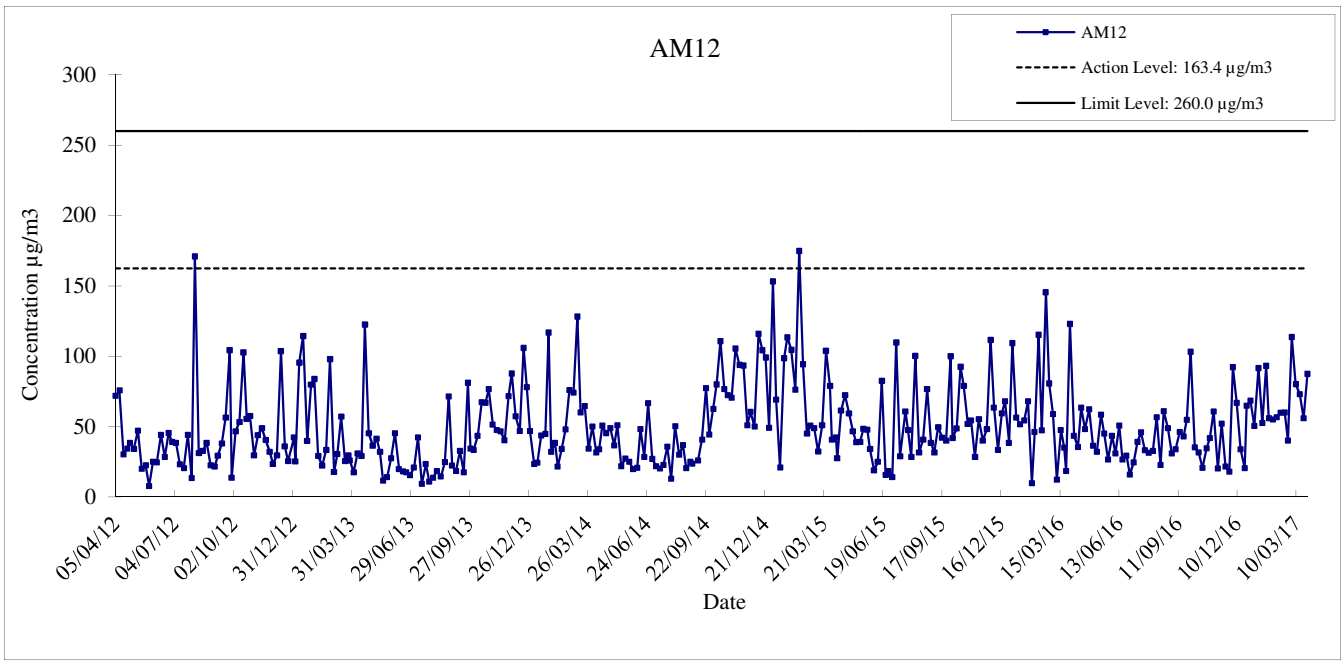
Annotation

Major Construction Activities:
a. Sheet Piling and Excavation (July 2011 - Aug 2012)
b. Utilities diversion and re-construction (Aug 2012 - Dec 2015)
c. Road diversion and underpass construction (Feb 2013 - Dec 2017)
d. Surface laying and Road markings (Oct 2017 - Sep 2018)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of 24-hour TSP Monitoring Result for Location AM9 and AM10**	**Date**	**2010 - 2018**
		APPENDIX	**G**



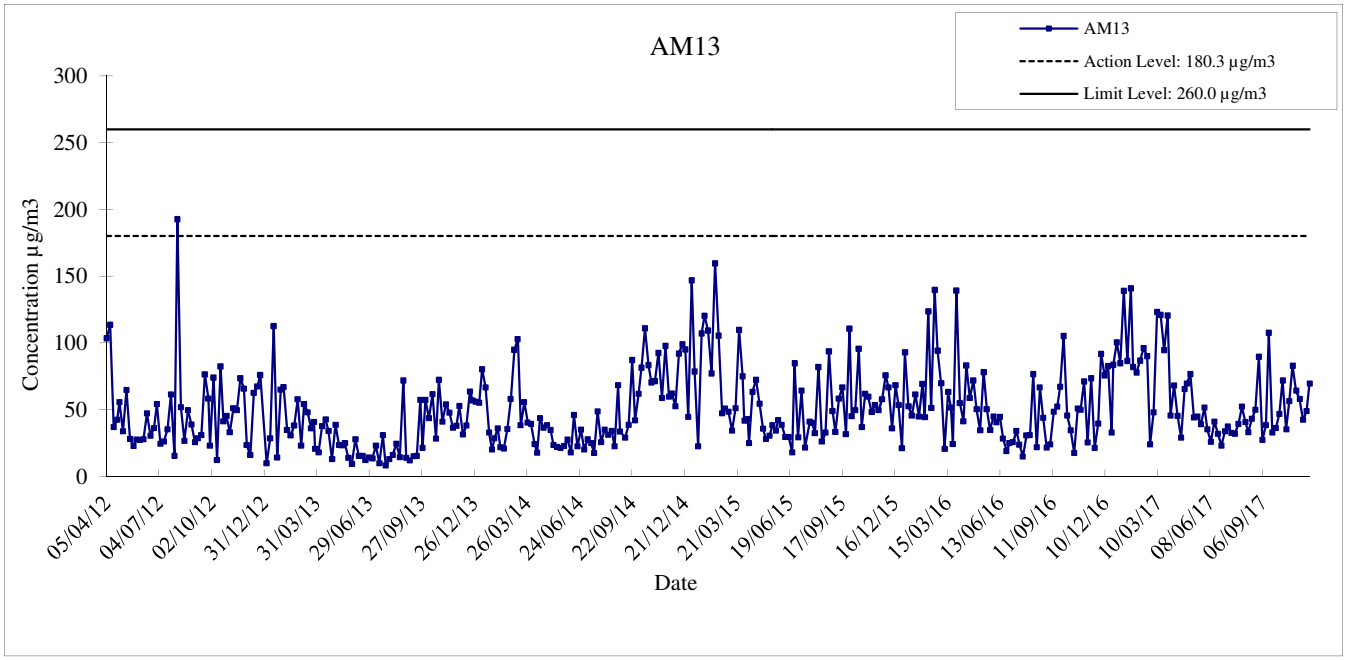


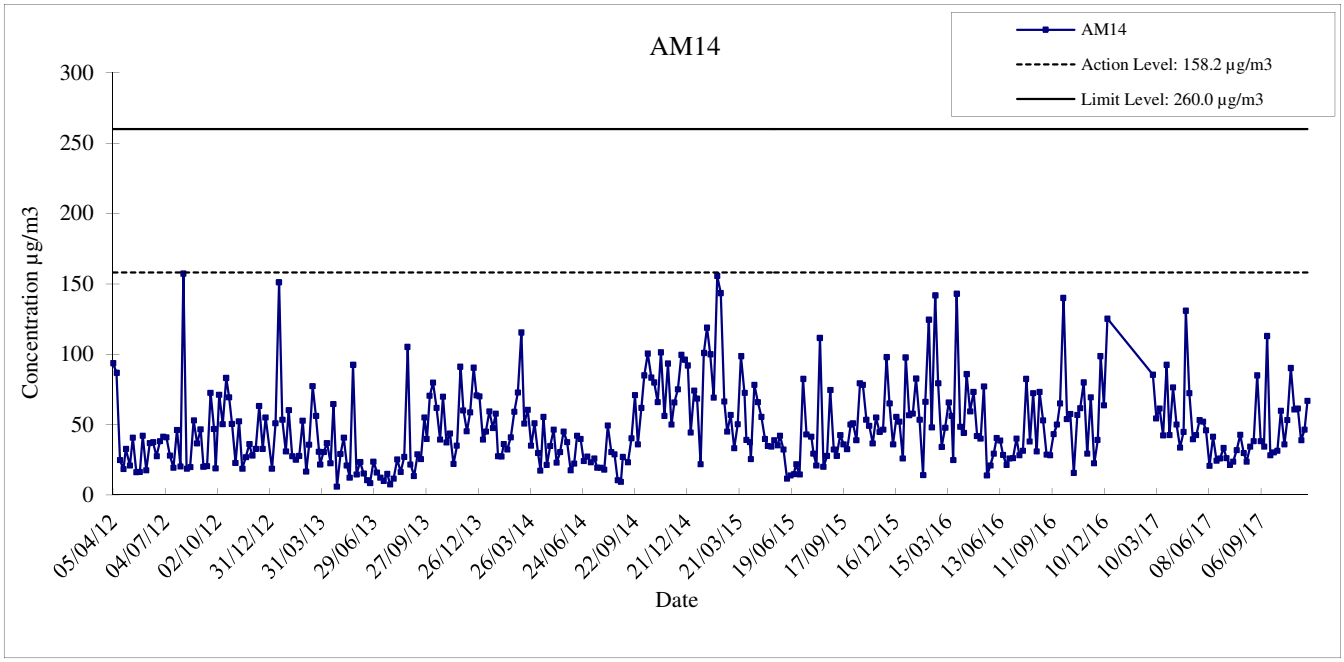
Annotation

Major Construction Activities:
a. Sheet Piling and Excavation (July 2011 - Aug 2012)
b. Utilities diversion and re-construction (Aug 2012 - Dec 2015)
c. Road diversion and underpass construction (Feb 2013 - Dec 2017)
d. Surface laying and Road markings (Oct 2017 - Sep 2018)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of 24-hour TSP Monitoring Result for Location AM11 and AM12**	**Date**	**2010 - 2018**
		APPENDIX	**G**



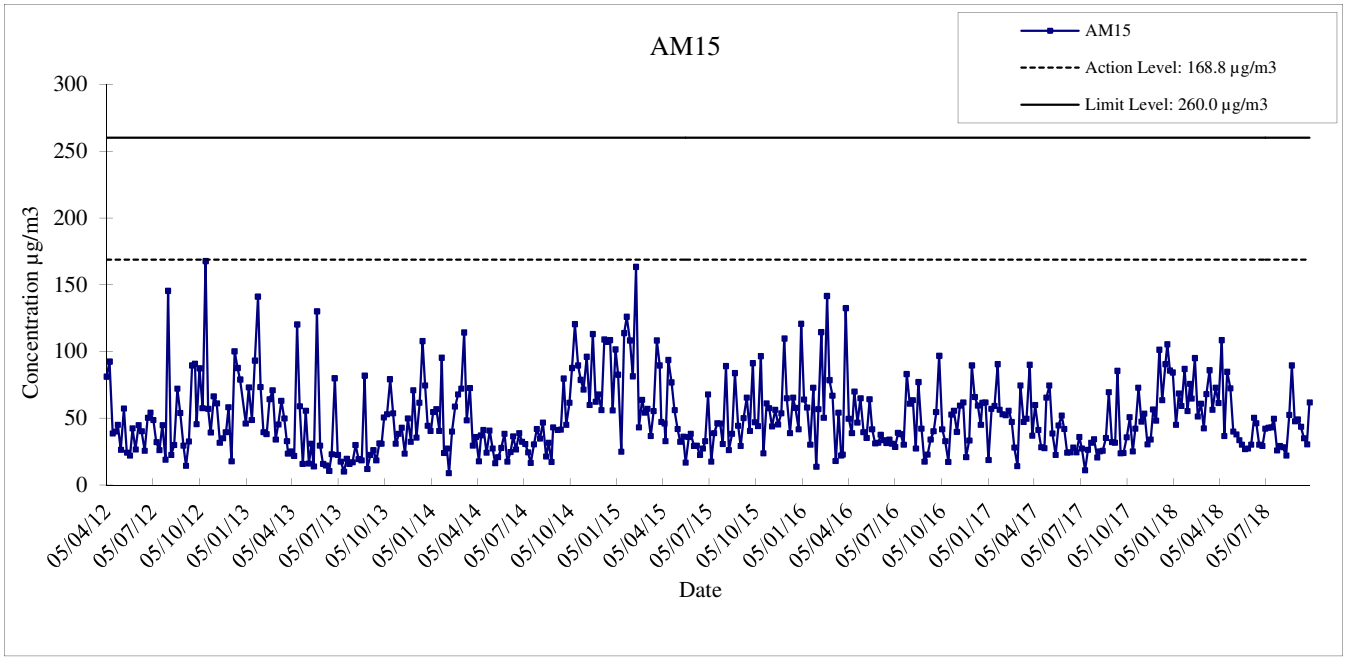


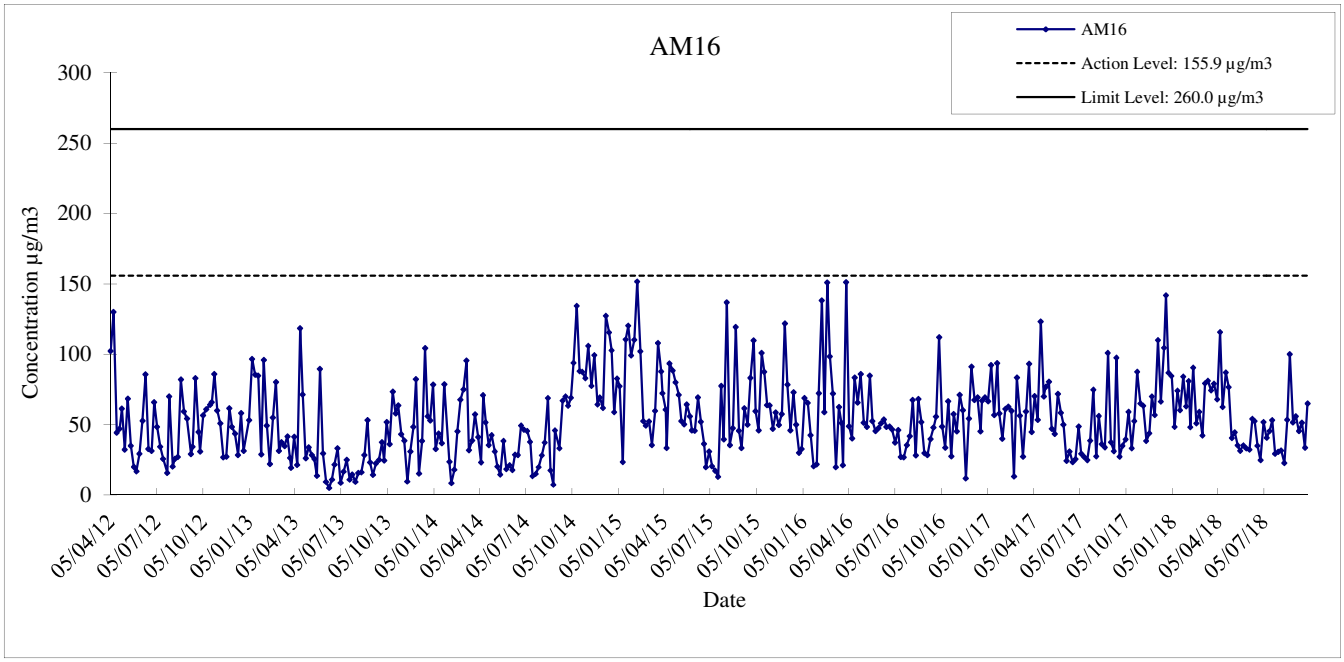
Annotation

Major Construction Activities:
a. Sheet Piling and Excavation (July 2011 - Aug 2012)
b. Utilities diversion and re-construction (Aug 2012 - Dec 2015)
c. Road diversion and underpass construction (Feb 2013 - Dec 2017)
d. Surface laying and Road markings (Oct 2017 - Sep 2018)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of 24-hour TSP Monitoring Result for Location AM13 and AM14**	**Date**	**2010 - 2018**
		APPENDIX	**G**



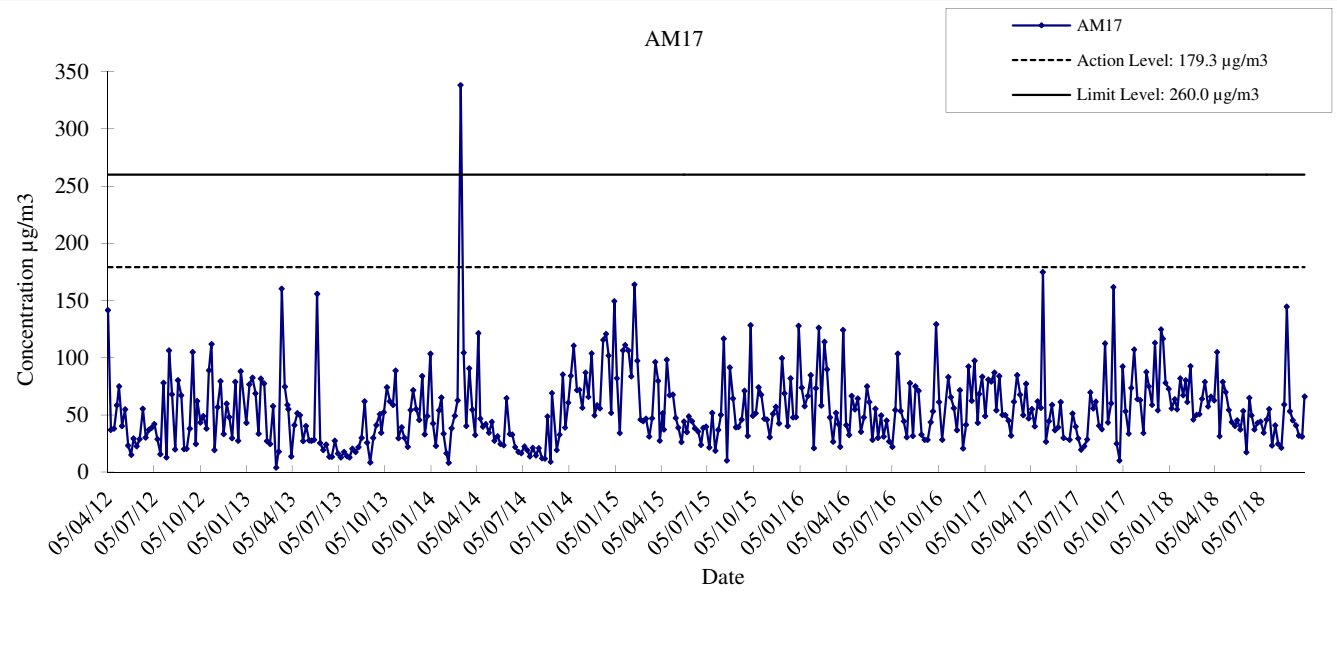


Annotation

Major Construction Activities:
a. Sheet Piling and Excavation (July 2011 - Aug 2012)
b. Utilities diversion and re-construction (Aug 2012 - Dec 2015)
c. Road diversion and underpass construction (Feb 2013 - Dec 2017)
d. Surface laying and Road markings (Oct 2017 - Sep 2018)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of 24-hour TSP Monitoring Result for Location AM15 and AM16**	**Date**	**2010 - 2018**
		APPENDIX	**G**



Annotation

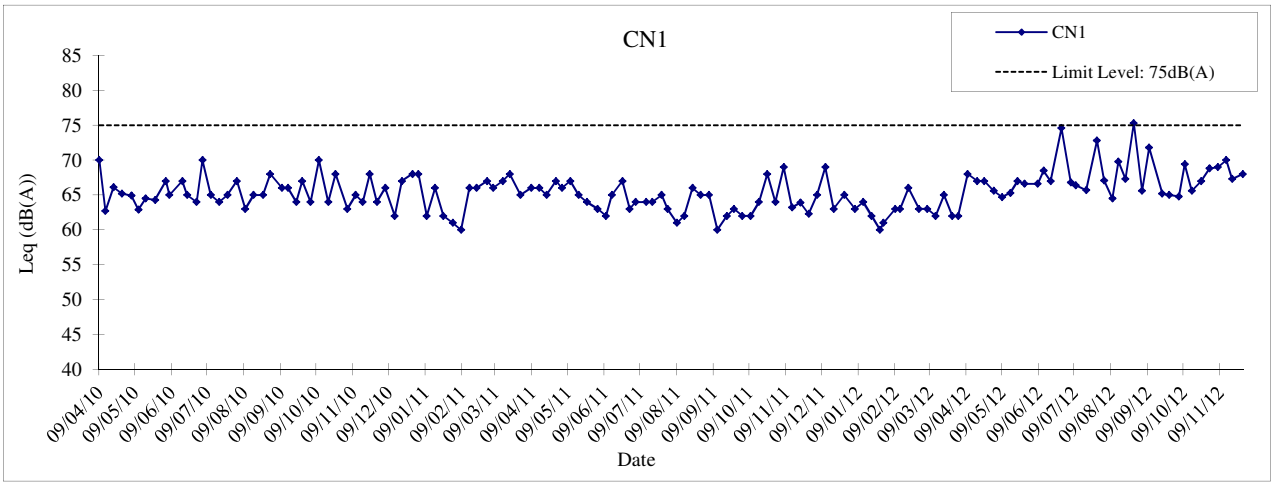
Major Construction Activities:
a. Sheet Piling and Excavation (July 2011 - Aug 2012)
b. Utilities diversion and re-construction (Aug 2012 - Dec 2015)
c. Road diversion and underpass construction (Feb 2013 - Dec 2017)
d. Surface laying and Road markings (Oct 2017 - Sep 2018)

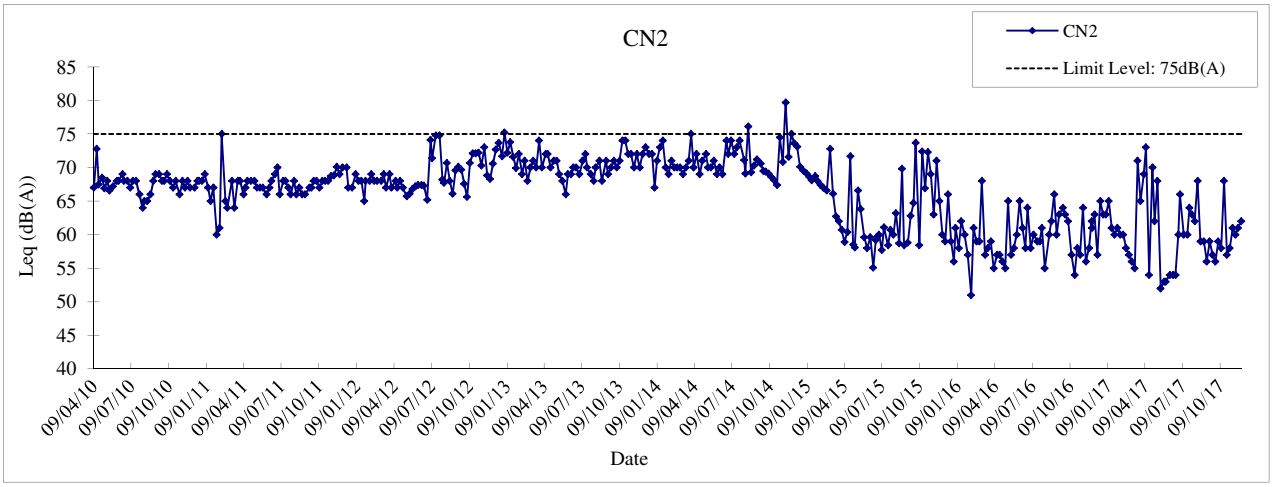
Weather Conditions: Typical fine and occassionally raining during the monitoring periods

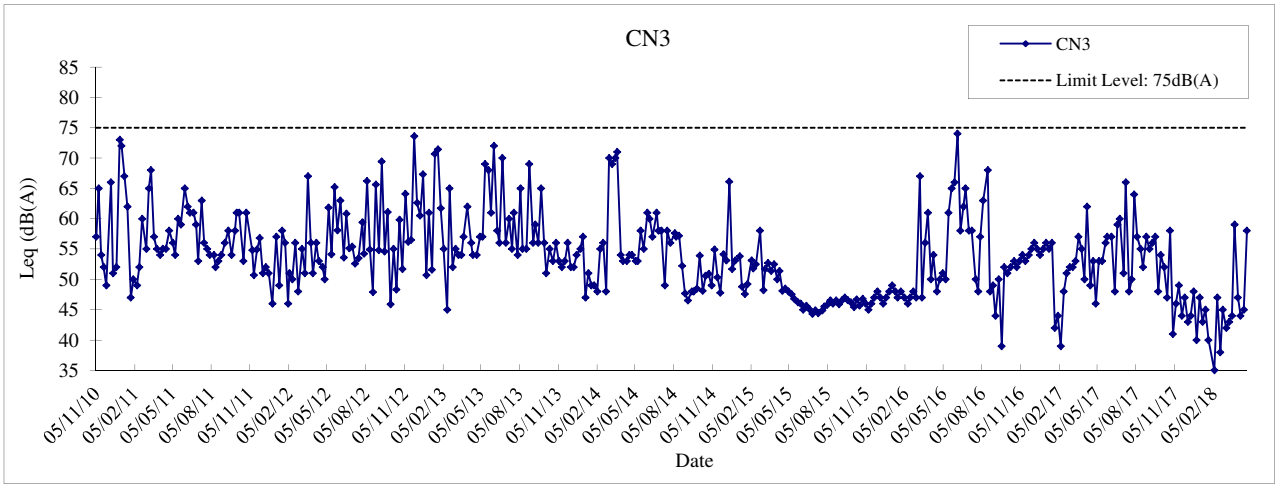
MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of 24-hour TSP Monitoring Result for Location AM17**	**Date**	**2010 - 2018**
		APPENDIX	**G**

Appendix H

Graphical Plots of Impact Monitoring Results (Air-borne Noise)





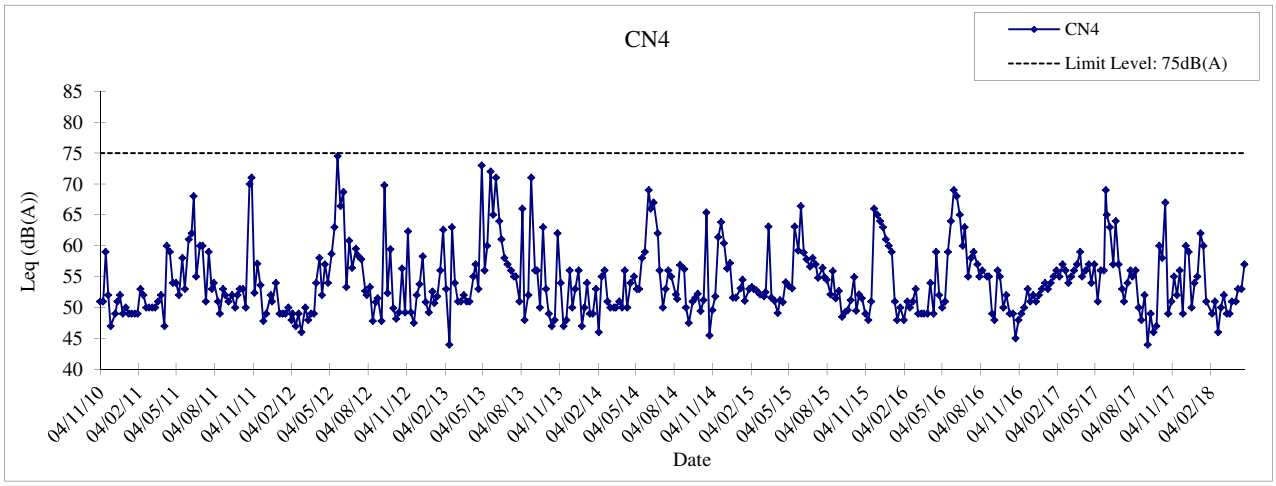


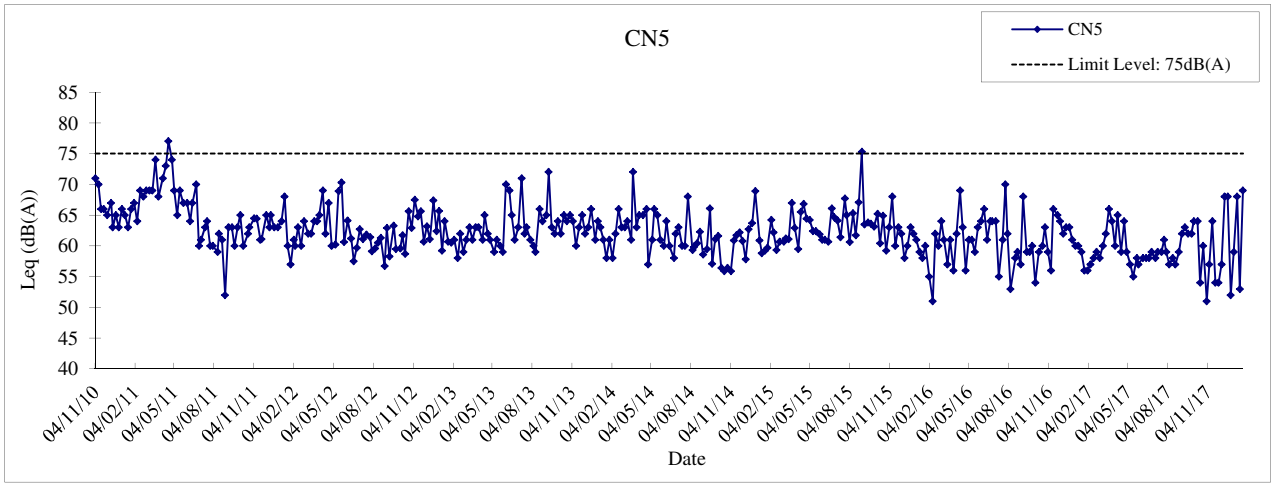
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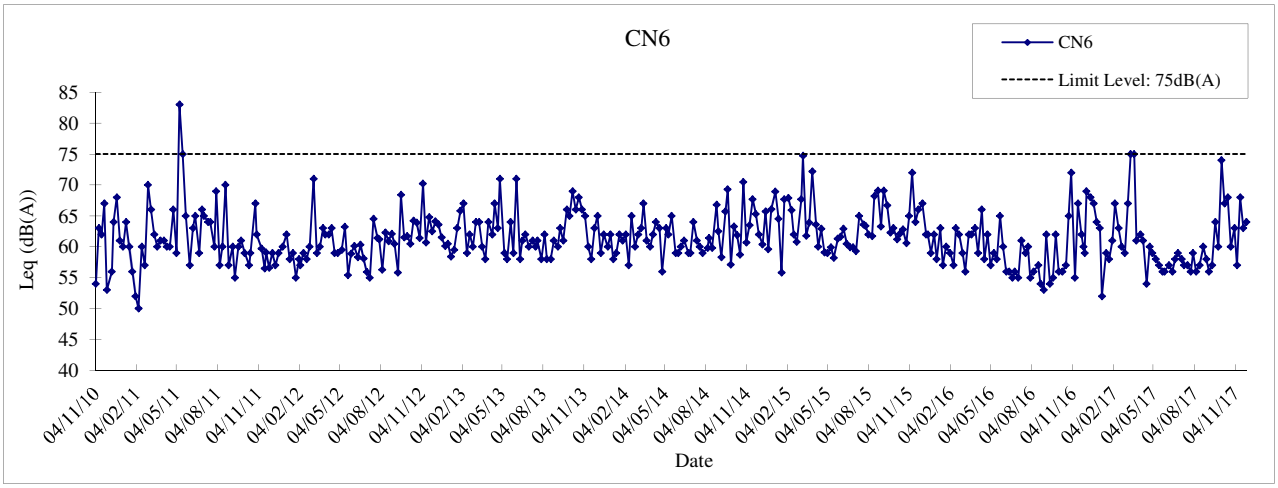
Major Construction Activities:
a. Bulk excavation (Jul 2010 - Apr 2013)
b. Cut and cover tunnel construction (Sep 2010 - Mar 2014)
c. TBM operation (Feb 2012 - Mar 2015)
d. Ventilation Buildings construction (Mar 2013 - Oct 2017)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of Noise Monitoring Results for Location CN1, CN2 and CN3**	**Date**	**2010 - 2018**
		APPENDIX	**H**





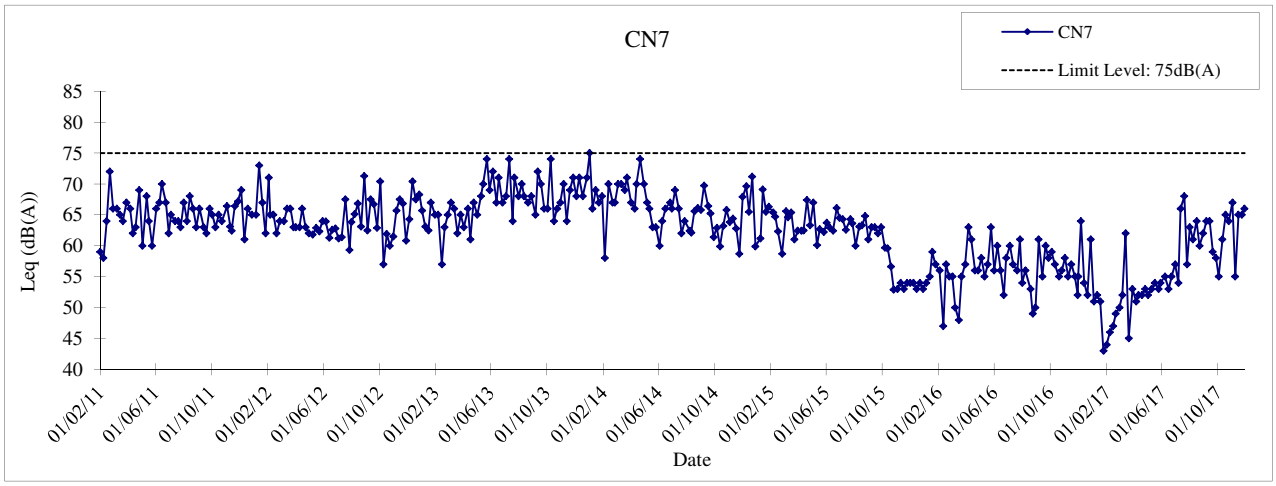


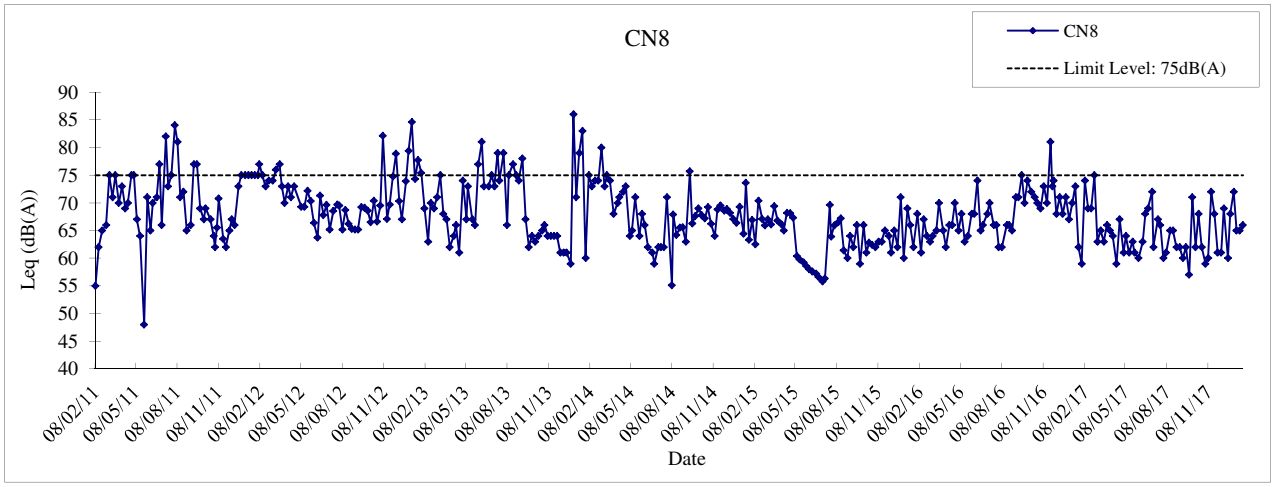
Annotation

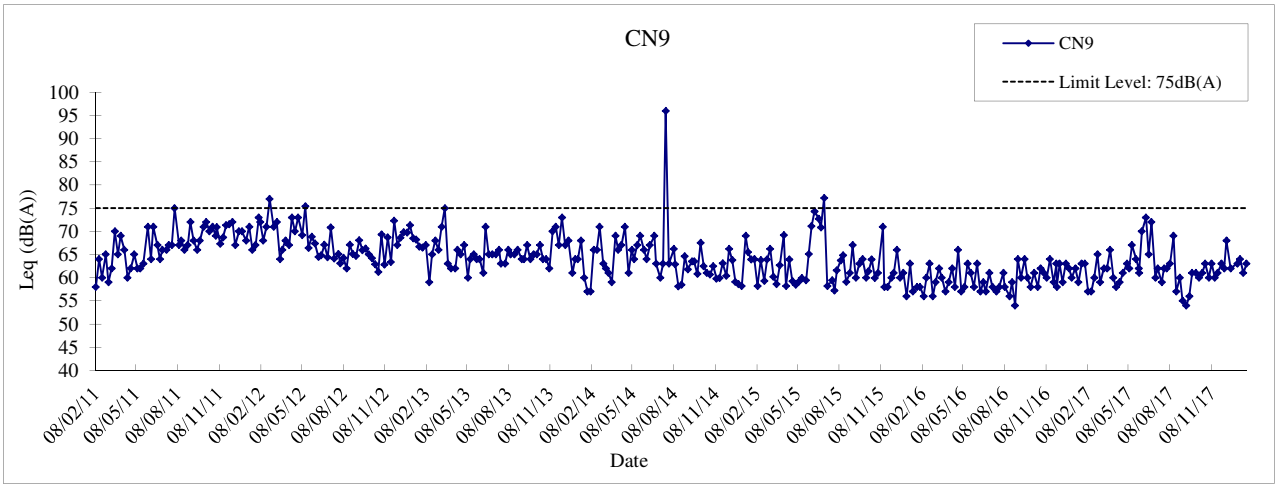
Major Construction Activities:
a. Bulk excavation (Sep 2010 - Jun 2015)
b. Tunnel construction (Jun 2011 - Jun 2016)
c. Ventilation Buildings construction (Sep 2014 - Mar 2017)
d. Reinstatement (Jul 2016 - Oct 2017)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of Noise Monitoring Results for Location CN4, CN5 and CN6**	**Date**	**2010 - 2018**
		APPENDIX	**H**





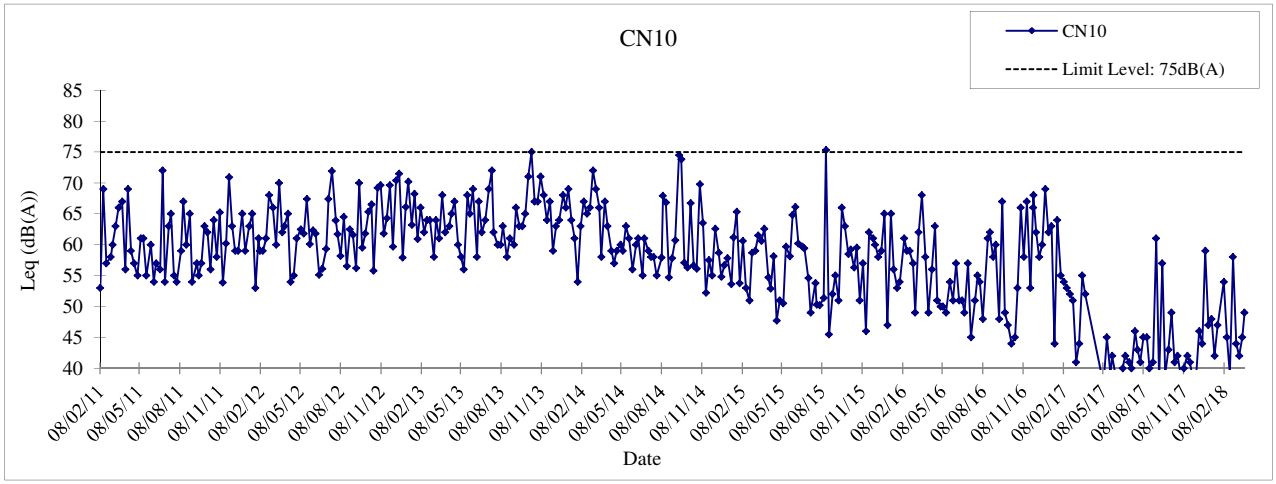


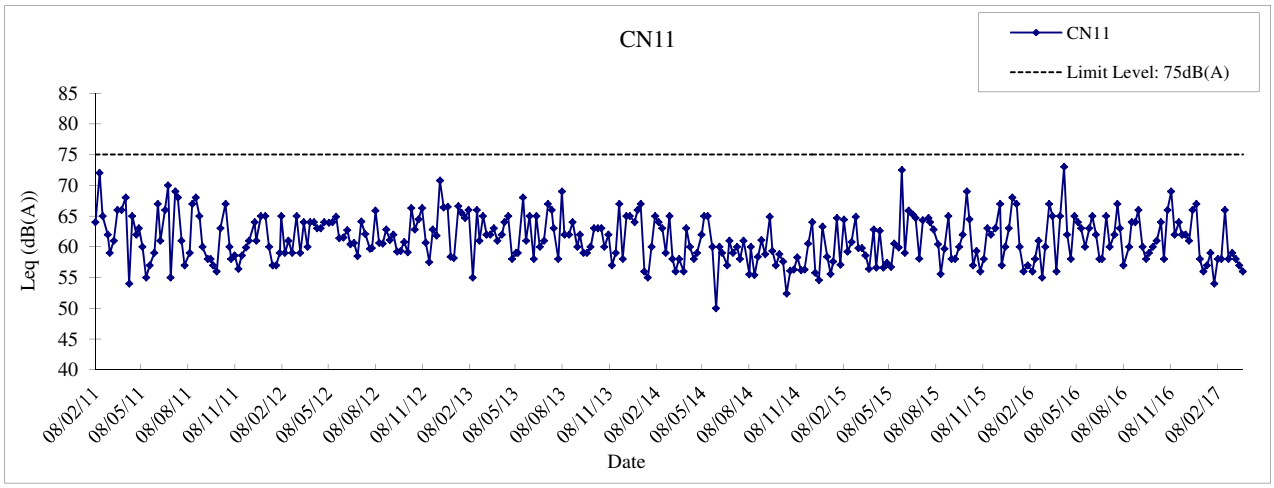
Annotation

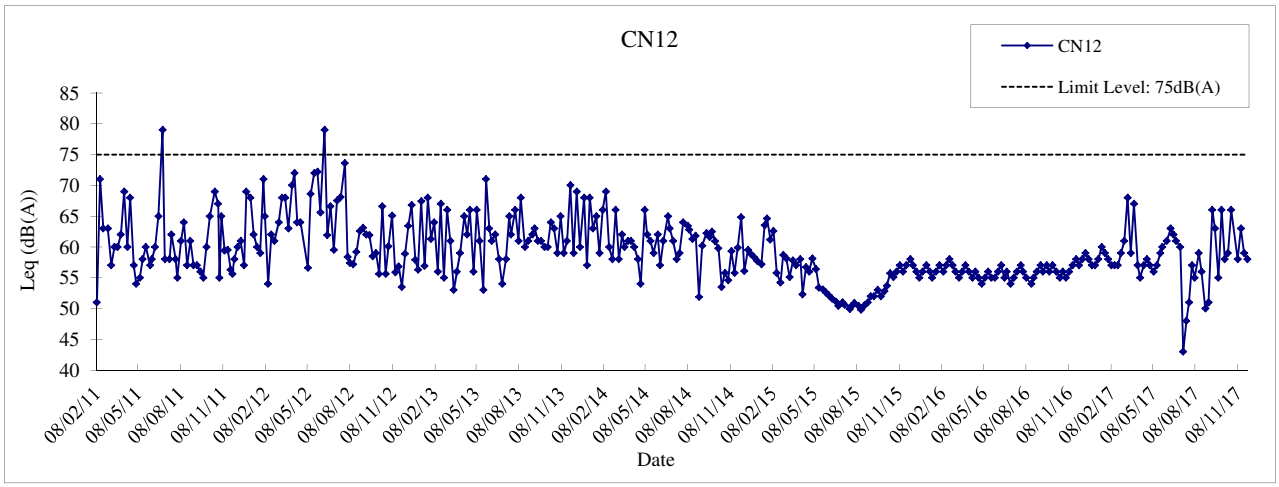
Major Construction Activities:
a. Shaft construction (Sep 2010 - May 2013)
b. TBM operation (Jun 2012 - Apr 2015)
c. Tunnel construction (Mar 2012 - Apr 2015)
d. Track laying (Jul 2017 - Mar 2018)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of Noise Monitoring Results for Location CN7, CN8 and CN9**	**Date**	**2010 - 2018**
		APPENDIX	**H**





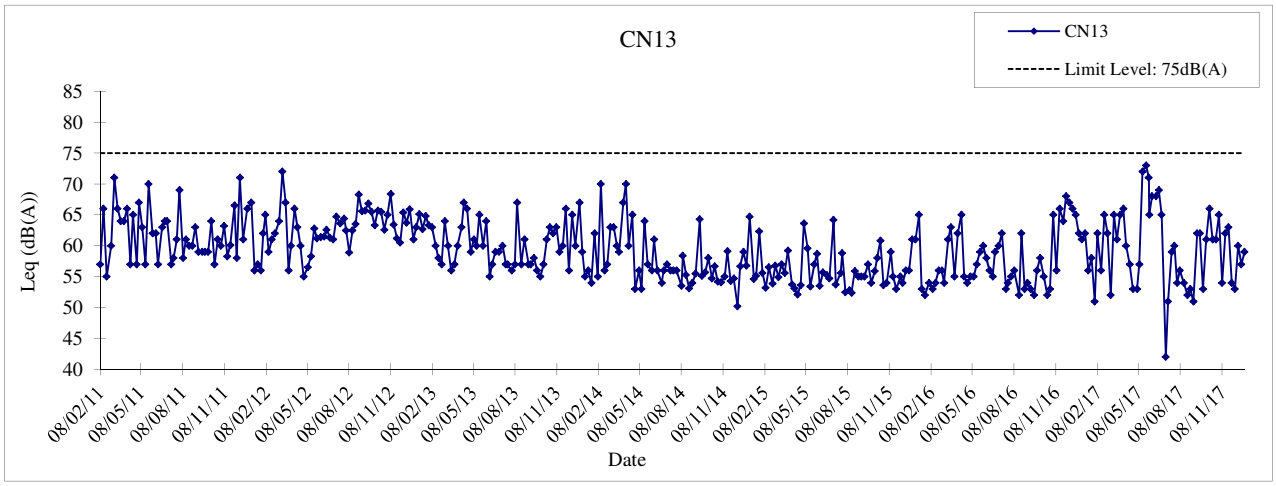


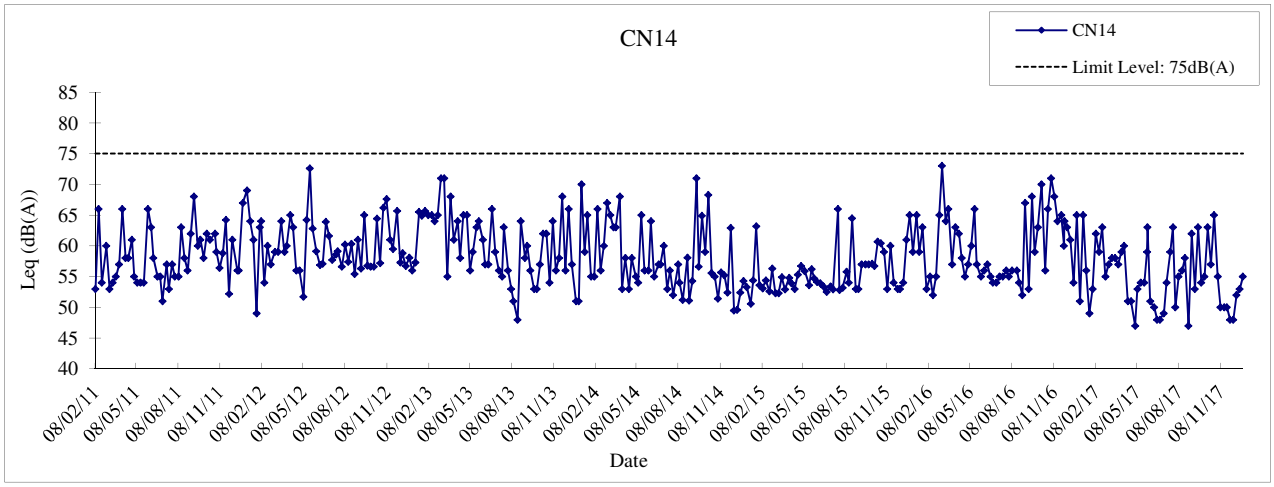
Annotation

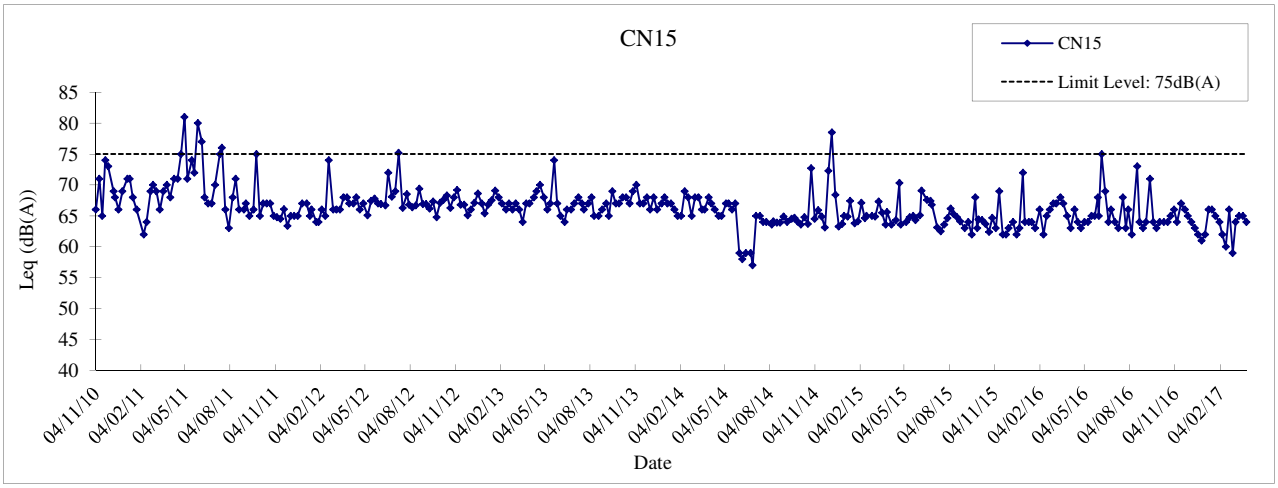
Major Construction Activities:
a. Shaft construction (Sep 2010 - May 2013)
b. TBM operation (Jun 2012 - Apr 2015)
c. Tunnel construction (Mar 2012 - Apr 2015)
d. Track laying (Jul 2017 - Mar 2018)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of Noise Monitoring Results for Location CN10, C11 and CN12**	**Date**	**2010 - 2018**
		APPENDIX	**H**





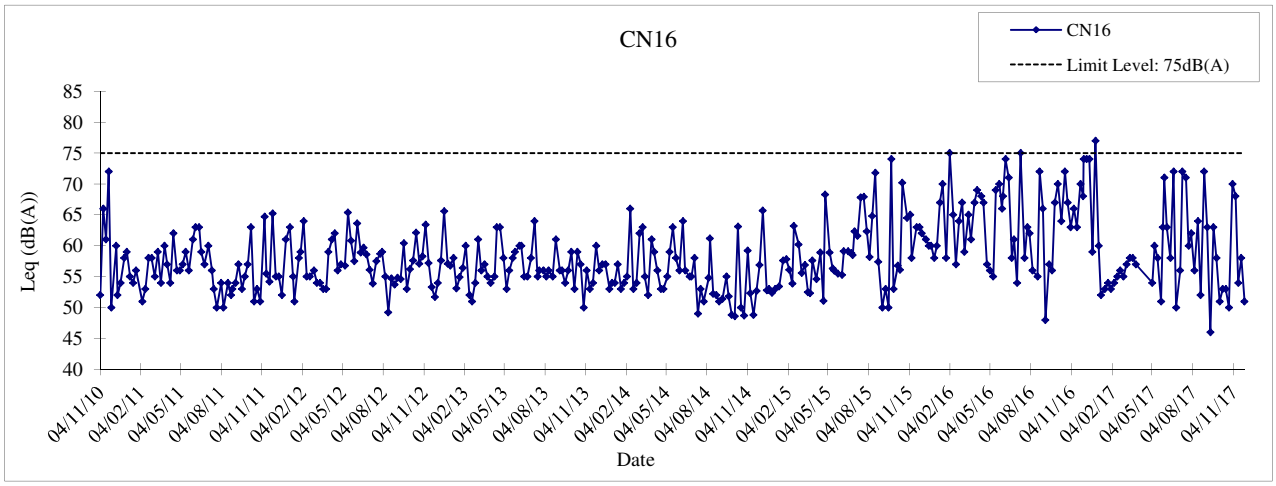


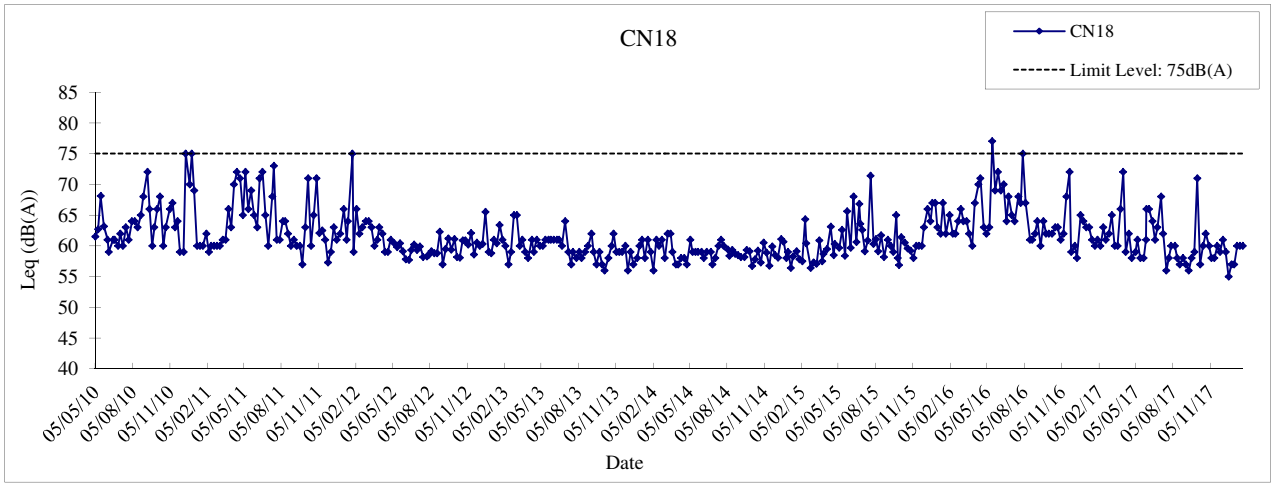
Annotation

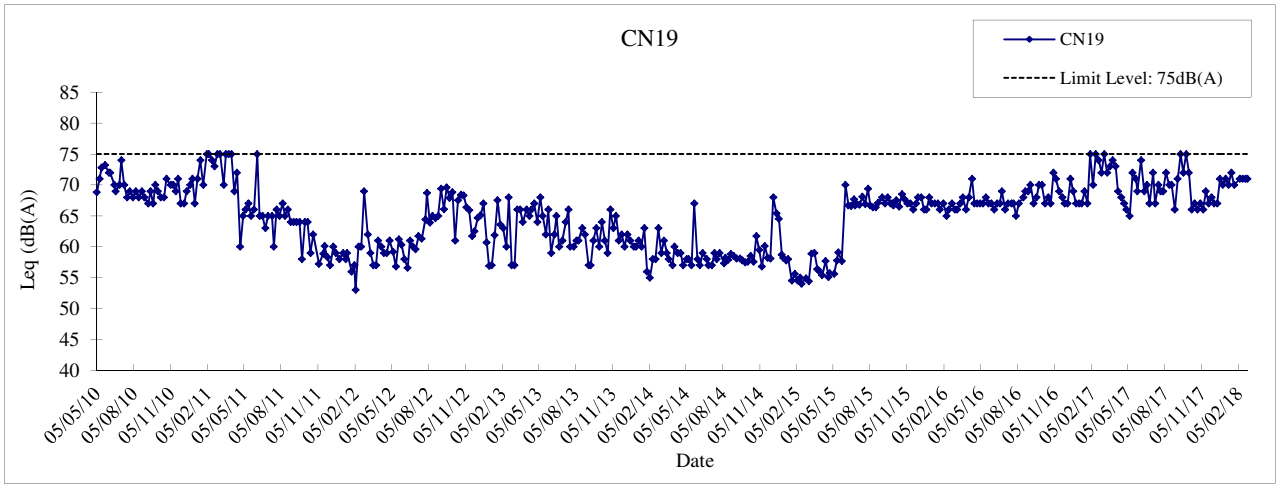
Major Construction Activities:
a. Bulk excavation (Sep 2010 - May 2013)
b. TBM operation (Jun 2012 - Apr 2015)
c. Tunnel construction (Mar 2012 - Apr 2015)
d. Reinstatement (Jun 2016 - Jan 2017)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of Noise Monitoring Results for Location CN13, C14 and CN15**	**Date**	**2010 - 2018**
		APPENDIX	**H**





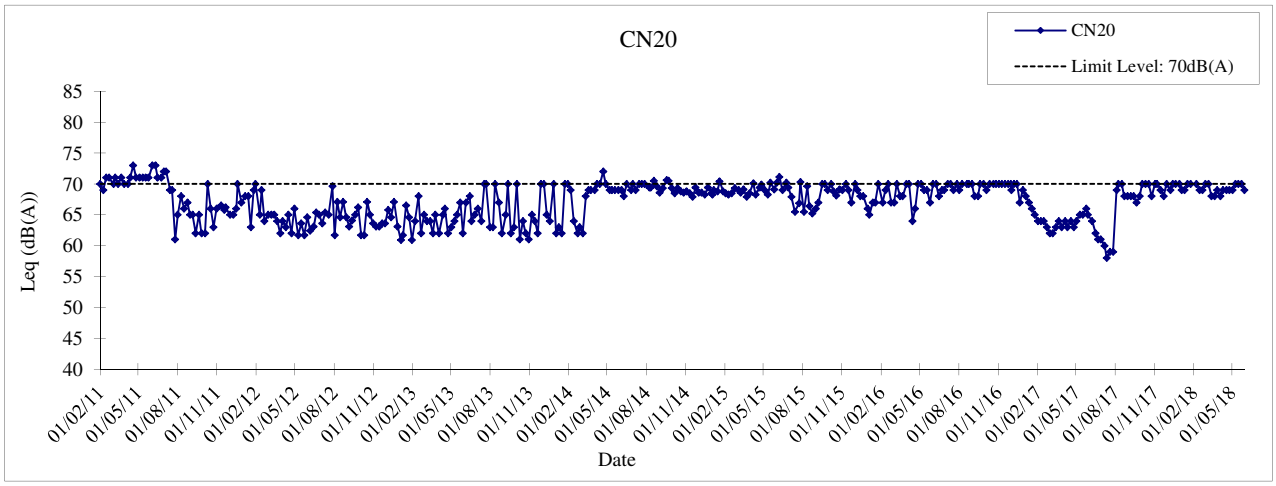


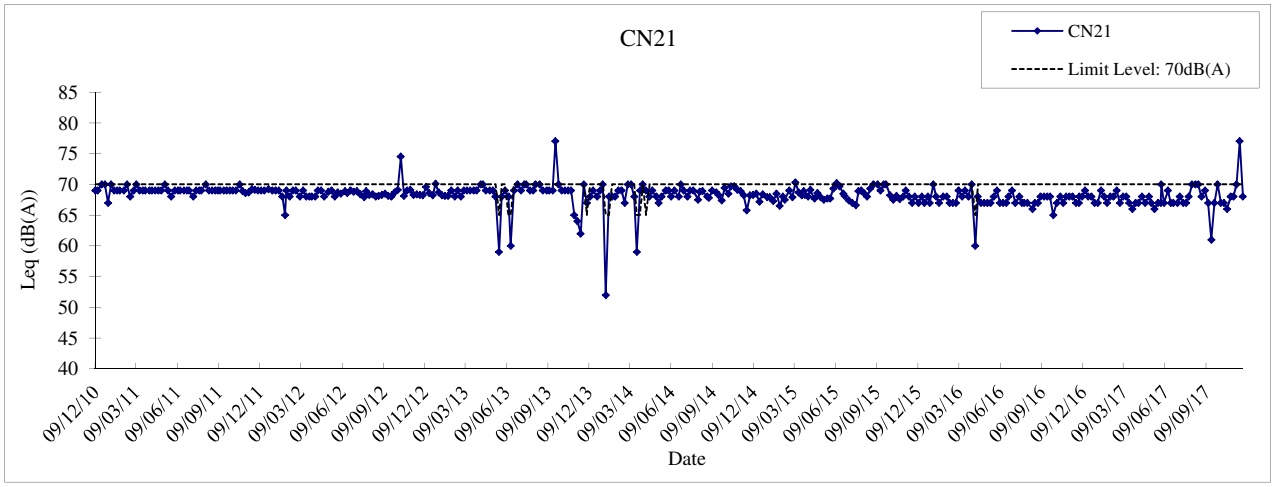
Annotation

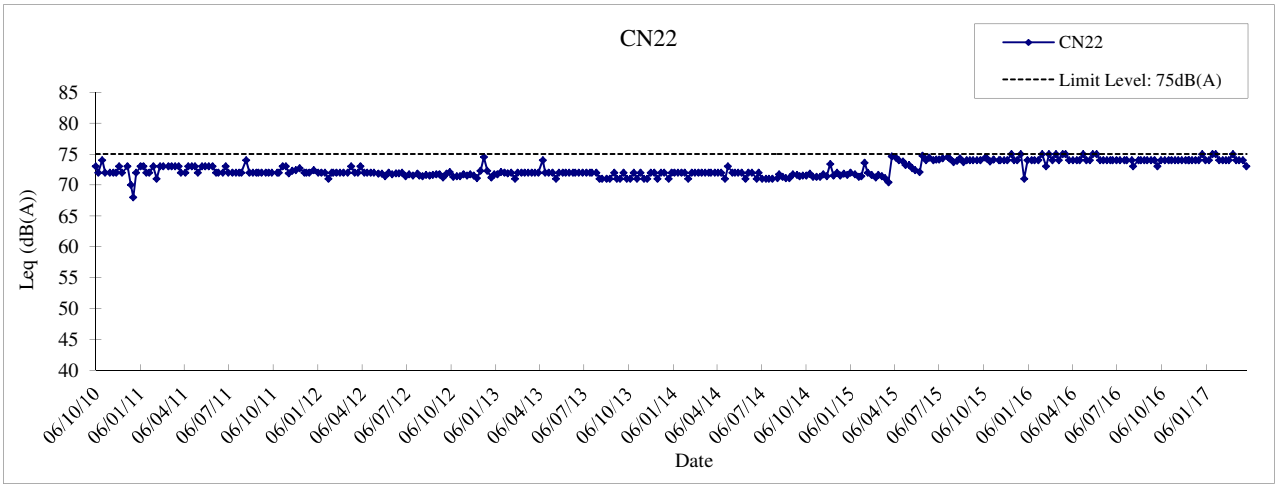
Major Construction Activities:
a. Bulk excavation (Sep 2010 - May 2013)
b. TBM operation (Jun 2012 - Apr 2015)
c. Tunnel construction (Mar 2012 - Apr 2015)
d. Reinstatement (Jun 2016 - Jan 2017)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of Noise Monitoring Results for Location CN16, C18 and CN19**	**Date**	**2010 -2018**
		APPENDIX	**H**





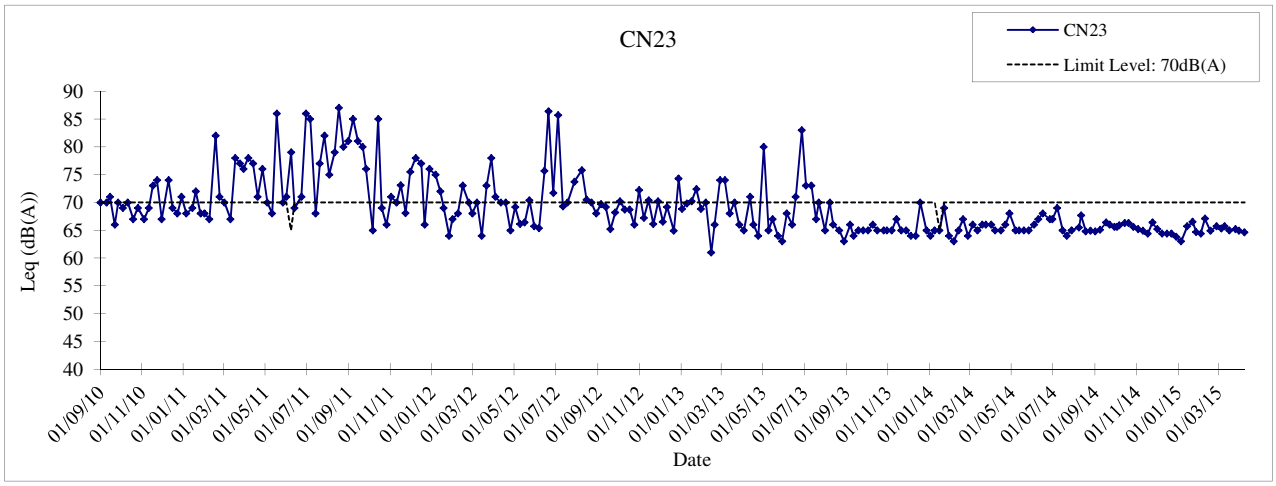


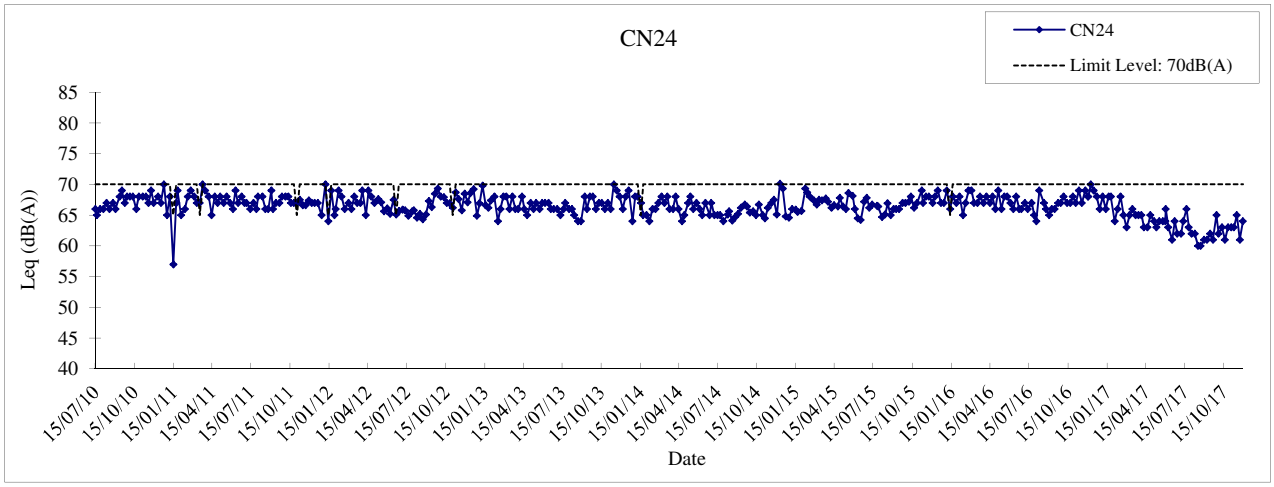
Annotation

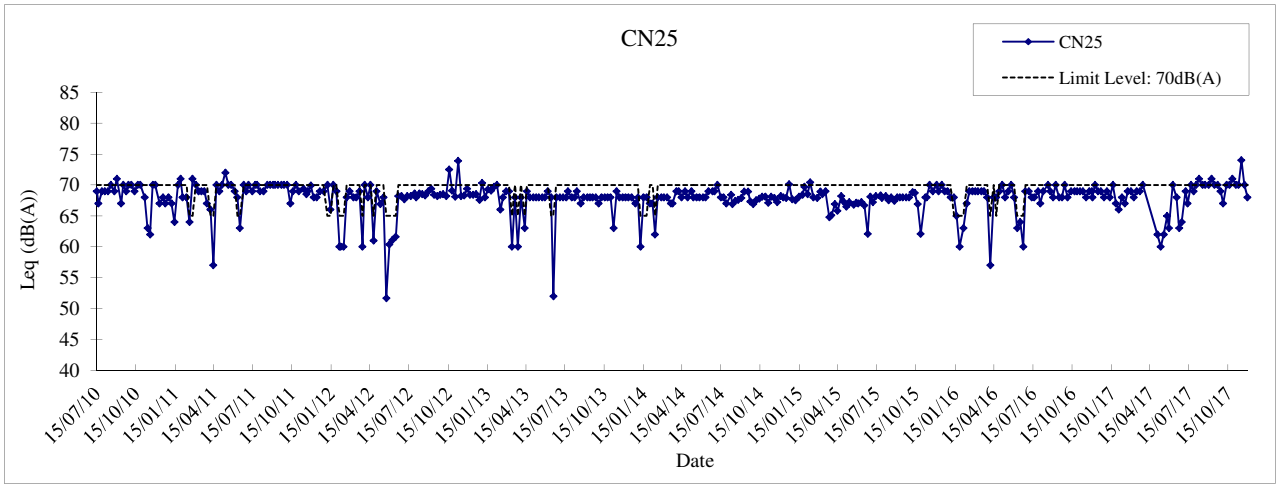
Major Construction Activities:
a. Cut and cover tunnel construction (Apr 2012 - Jan 2015)
b. TBM operation (Oct 2012 - Dec 2014)
c. Ventilation Building construction (Oct 2013 - Jul 2016)
d. Reinstatement (Jul 2016 - Jan 2017)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of Noise Monitoring Results for Location CN20, CN21 and CN22**	**Date**	**2010 -2018**
		APPENDIX	**H**





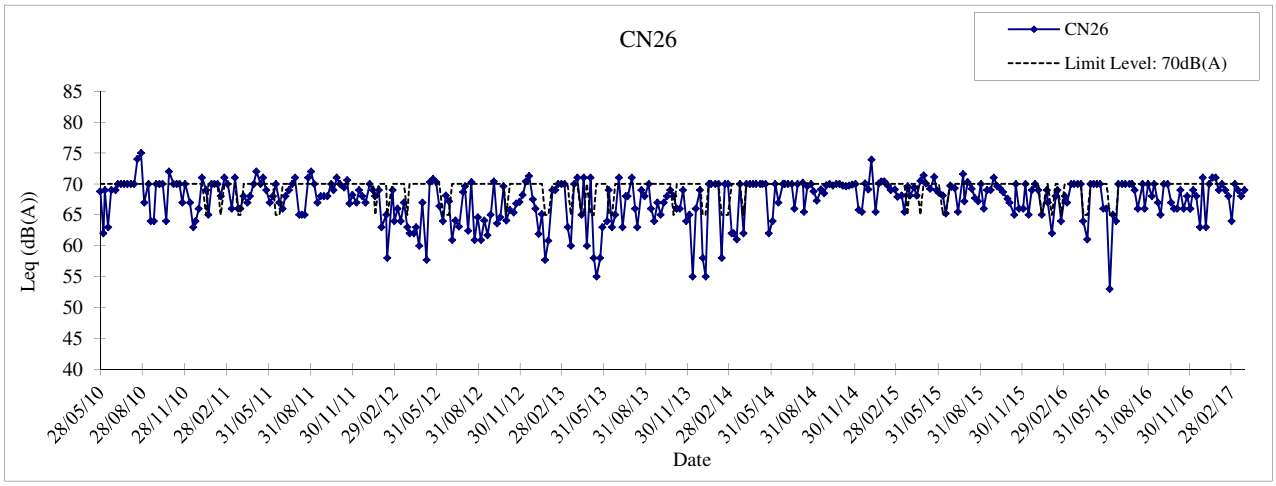


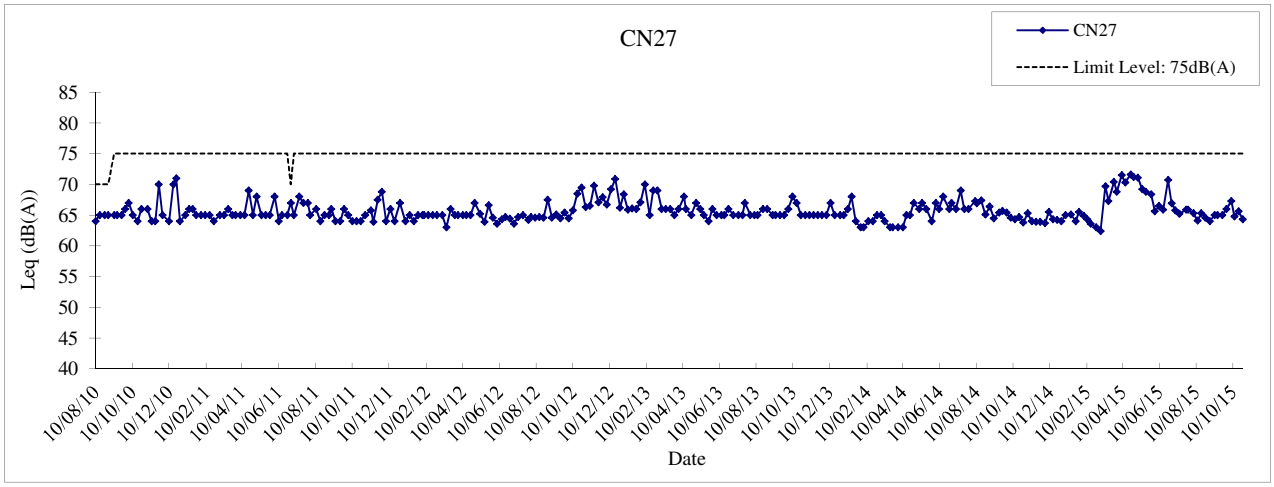
Annotation

Major Construction Activities:
a. Cut and cover tunnel construction (Apr 2012 - Jan 2015)
b. TBM operation (Oct 2012 - Dec 2014)
c. Ventilation Building construction (Oct 2013 - Jul 2016)
d. Reinstatement (Jul 2016 - Jan 2017)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of Noise Monitoring Results for Location CN23, CN24 and CN25**	**Date**	**2010 -2018**
		APPENDIX	**H**



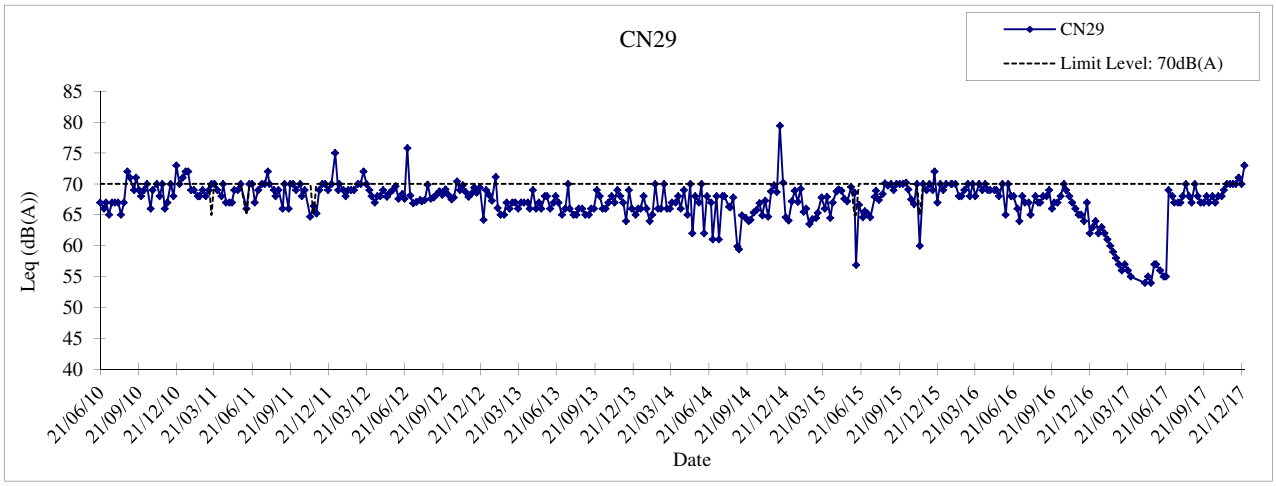


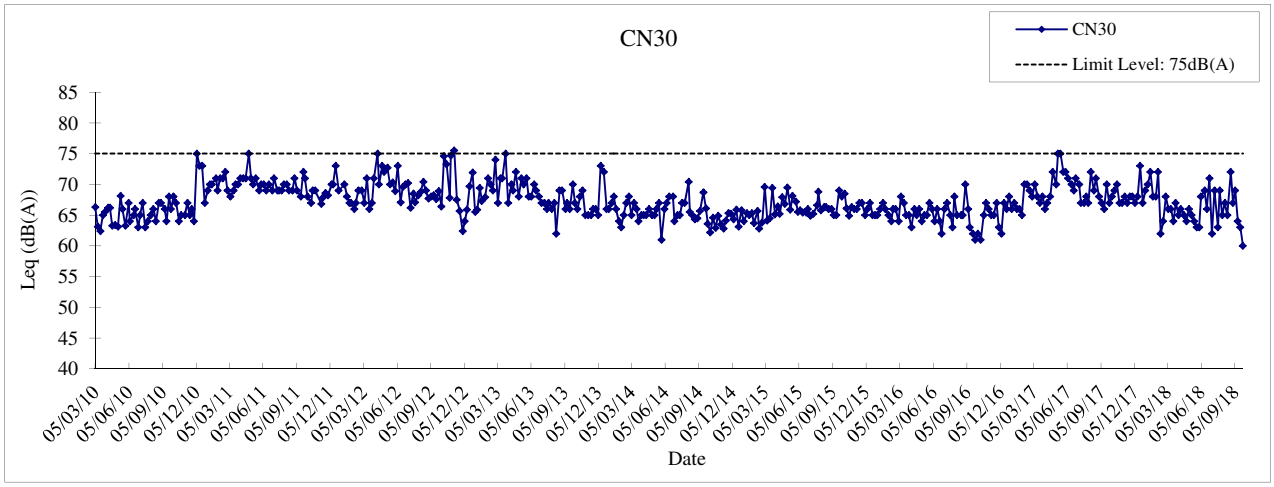
Annotation

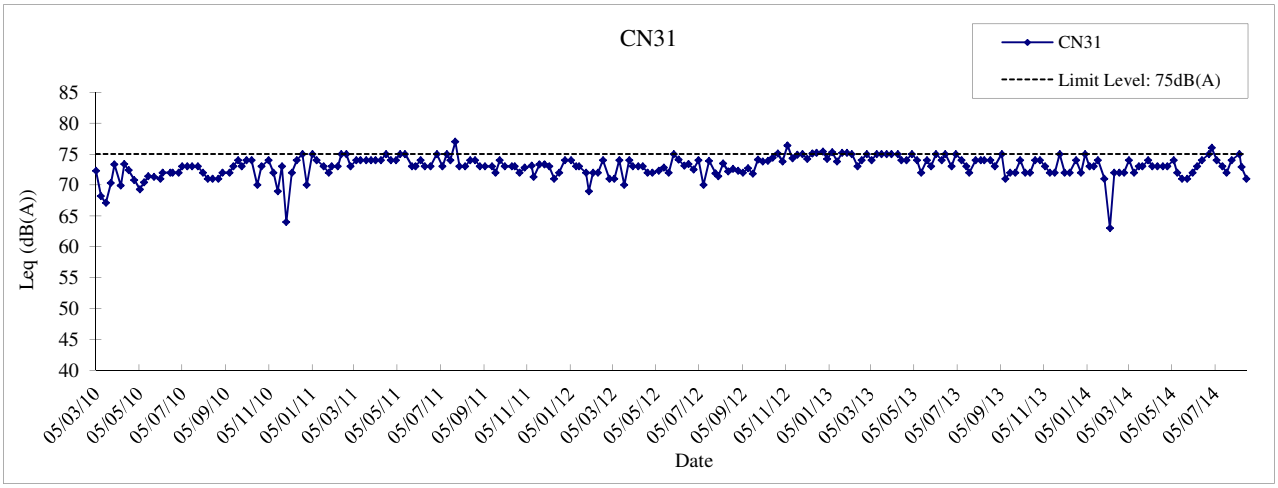
Major Construction Activities:
a. Pile removal (Apr 2012 - Jan 2017)
b. Cut and cover tunnel construction (Apr 2012 - Jan 2015)
c. TBM operation (Oct 2012 - Dec 2014)
d. Ventilation Building construction (Oct 2013 - Jul 2016)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of Noise Monitoring Results for Location CN26 and CN27**	**Date**	**2010 - 2018**
		APPENDIX	**H**





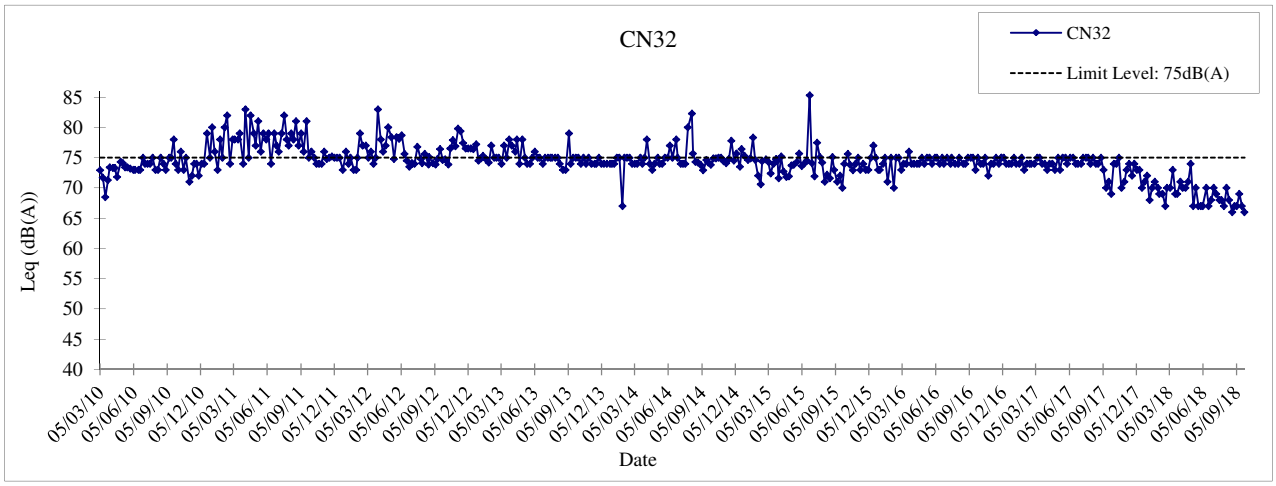


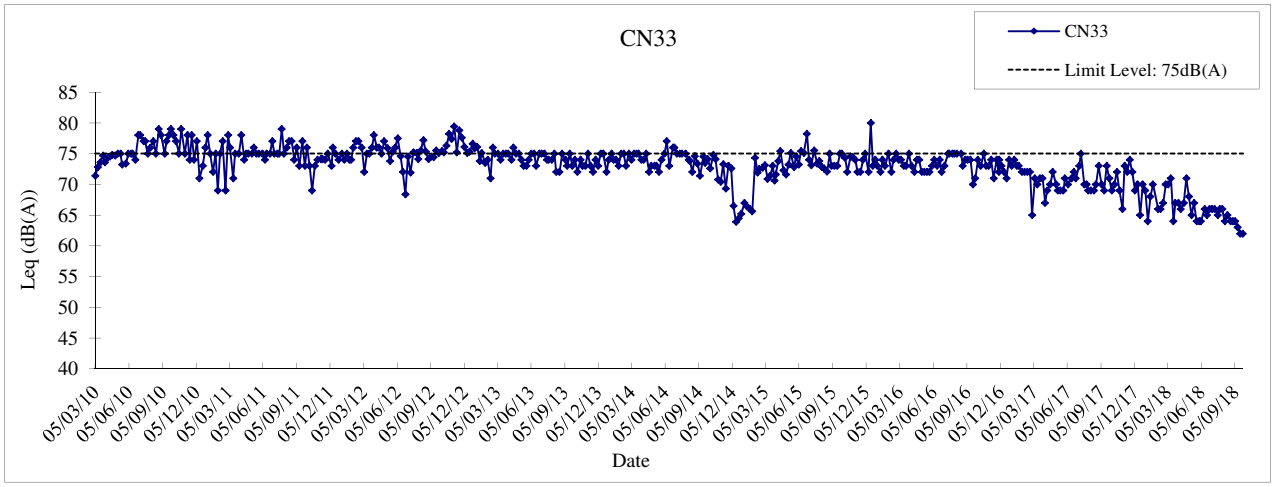
Annotation

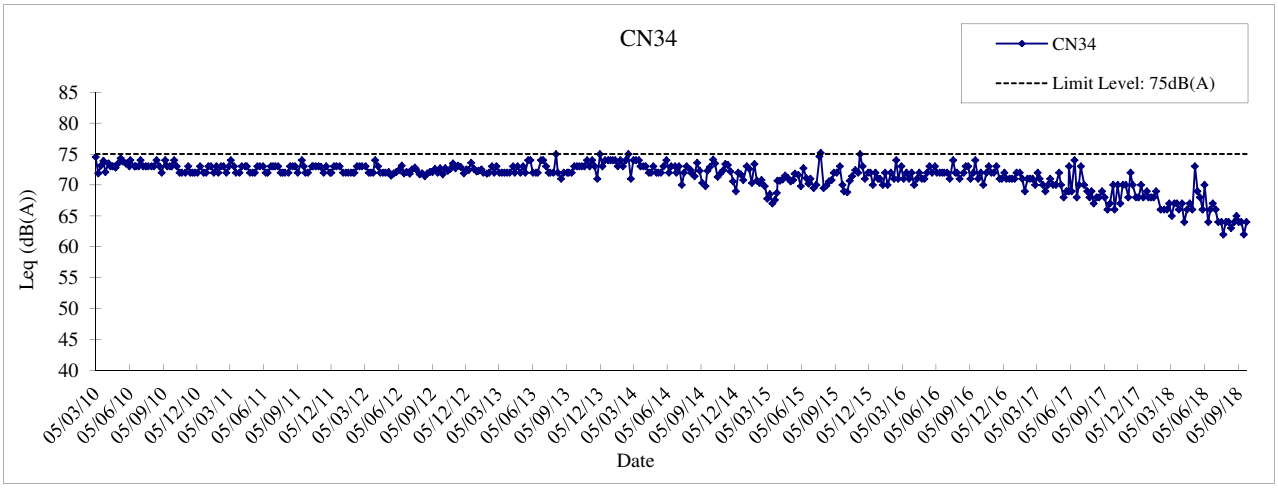
Major Construction Activities:
a. Shaft excavation (Apr 2012 - Jan 2014)
b. Bulk excavation (Jun 2012 - Aug 2016)
c. Utilities diversion and re-provision (Jan 2013 - Oct 2017)
d. Reinstatement (Jan 2018 - Sep 2018)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of Noise Monitoring Results for Location CN29, CN30 and CN31**	**Date**	**2010 - 2018**
		APPENDIX	**H**







Annotation

Major Construction Activities:
a. Foundation works (Mar 2012 - Mar 2014)
b. Drill and blast work (Jul 2014 - Aug 2015)
c. Station substructure and superstructure (Jan 2013 - Mar 2018)
d. Reinstatement (Feb 2018 - Sep 2018)

Weather Conditions: Typical fine and occassionally raining during the monitoring periods

MTR	Hong Kong Section of Guangzhou-Shenzhen-Hong Kong Express Rail Link **Graphical Presentation of Noise Monitoring Results for Location CN32, CN33 and CN34**	**Date**	**2010 - 2018**
		APPENDIX	**H**