

Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

Quarterly EM&A Report

Aug 2018 to Oct 2018

Submitted to

Environmental Protection Department

Prepared By

Meinhardt Infrastructure and Environment Ltd

Meinhardt Infrastructure and Environment Limited

**Entrusted Portion of Widening of Tolo
Highway / Fanling Highway between Island
House Interchange and Fanling Stage 2**

Quarterly EM&A Report

(Aug 2018 to Oct 2018)

Certified by: Fredrick Leong 

Position: Environmental Team Leader

Date: 16 Nov 2018

Hyder-Arup-Black & Veatch Joint Venture
c/o Arcadis
17/F, Two Harbour Square,
180 Wai Yip Street,
Kwun Tong, Hong Kong
Attn: Mr. James Penny

Your Reference

Our Reference

JFP/EC/ST/pl/T329380/22
.05/L-0236

3/F Mapletree Bay Point
348 Kwun Tong Road
Kowloon
Hong Kong

T +852 2828 5757
F +852 2827 1823
mottmac.hk

Environmental Monitoring and Audit (EM&A) for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Stage 2 (between Tai Hang to Wo Hop Shek Interchange) – Entrusted Works Environmental Permit No. EP-324/2008/E Quarterly EM&A Summary Report for August 2018 to October 2018 for the portion of Stage 2 works entrusted to CEDD under Contract No. CV/2012/09

16 November 2018

By Fax (2805 5028) & Hand

We refer to the revised Quarterly EM&A Summary Report for August 2018 to October 2018 for the Project received on 15 November 2018 submitted by ET via email. We confirm we have no comment.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED


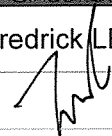
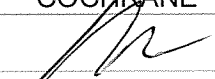

Steven Tang
Independent Environmental Checker

c.c.

HyD
CEDD/BCP
AECOM
Meinhardt

Mr. Chung Lok Chin
Mr. Lu Pei Yu
Mr. Alan Lee
Mr. Fredrick Leong

By Fax (2116 0714)
By Fax (3547 1659)
By Fax (2171 3498)
By Fax (2540 1580)

Date	Revision	Prepared By	Checked By	Approved By
16 Nov 2018	0	WK CHIU Bobo HUI 	Fredrick LEONG 	Helen COCHRANE 

Contents

	Page
EXECUTIVE SUMMARY	i
1 INTRODUCTION AND PROJECT INFORMATION	1
1.1 Background.....	1
1.2 Construction Programme and Activities.....	1
1.3 Project Organisation.....	2
1.4 Purpose of the Report	2
2 SUMMARY OF EM&A REQUIREMENTS	2
2.1 Monitoring Requirements	2
2.2 Environmental Mitigation Measures.....	3
3 SUMMARY OF EM&A Monitoring Data	3
3.1 Monitoring Data.....	3
3.2 Summary of Monitoring Exceedances	3
4 WASTE MANAGEMENT	4
5 ENVIRONMENTAL NON-CONFORMANCE	5
6 CONCLUSION, COMMENTS AND RECOMMENDATIONS	5

List of Tables

Table 1.1	Contact Information of Key Personnel
Table 2.1	Monitoring Parameter
Table 3.1	Summary of Monitoring Data in the Reporting Quarter
Table 3.2	Summary of Exceedance Events in the Reporting Quarter

List of Figures

Figure 1	Demarcation of Entrusted Portion of Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling – Stage 2
Figure 2	Environmental Monitoring Locations

List of Appendices

Appendix A	Construction Programme
Appendix B	Project Organization Structure
Appendix C	Implementation Schedule of Environmental Mitigation Measures (EMIS)
Appendix D	Meteorological Data Extracted from Hong Kong Observatory
Appendix E	Environmental Monitoring Data for Air Quality and Noise
Appendix F	Waste Flow Table
Appendix G	Statistics on Complaints, Notifications of Summons and Successful Prosecutions

EXECUTIVE SUMMARY

This report documents the findings of EM&A works conducted in the quarter between 1 Aug 2018 and 31 Oct 2018.

The impact stage EM&A programme for the Project includes air quality and noise monitoring.

The EM&A programme was carried out by the ET in accordance with the EM&A Manual requirements. It is concluded from the environmental monitoring and audit works that adequate environmental mitigation measures have been implemented by the civil works contractors where appropriate in the reporting quarter.

In the reporting quarter, no exceedance event was recorded. No necessary remedial actions have been taken.

No environmental non-compliance was recorded in the reporting quarter. No environmental complaint was received in the reporting quarter. No environmental related prosecution or notification of summons was received in the reporting quarter.

The box culvert works have been partially completed by the end of March 2014 except the last construction activity, installation of a base slab at Box Culvert ID4. The installation of the base slab at Box Culvert ID4 was commenced in December 2016 and has been completed in March 2017.

The 4-week post construction water quality monitoring has been commenced and completed in April 2017.

1 INTRODUCTION AND PROJECT INFORMATION

1.1 Background

- 1.1.1 The Project is a Designated Project under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499). An Environmental Impact Assessment (EIA) Report together with an Environmental Monitoring and Audit (EM&A) Manual were approved on 14 July 2000 (Register Number: EIA-043/2000). The Project is governed by an Environmental Permit (EP) (EP-324/2008) which was granted on 23 December 2008. A variation of EP (VEP) was applied and the VEP (EP-324/2008/A) was subsequently granted on 31 January 2012. An additional VEP has been applied on 24 February 2014 and the VEP (EP-324/2008/B) was subsequently granted on 17 March 2014. Furthermore, an additional VEP has been applied on 9 March 2015 and the VEP (EP-324/2008/C) was subsequently granted on 27 March 2015. The previous VEP (EP-324/2008/D) was granted on 27 August 2015. The current VEP (EP-324/2008/E) was granted on 26 January 2017.
- 1.1.2 Chun Wo Construction & Engineering Co Ltd (Chun Wo) was commissioned by the Civil Engineering and Development Department (CEDD) as the Civil Contractor for the Entrusted Portion of Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Stage 2. Meinhardt Infrastructure & Environment Ltd (MIEL) has been appointed by Chun Wo as the Environmental Team (ET) to fulfill the corresponding EM&A requirements pursuant to Environmental Permit No. EP-324/2008/D in accordance with the Updated EM&A Manual (dated March 2015) for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Stage 2. The EM&A programme commenced in 5 November 2013.
- 1.1.3 **Figure 1** shows the works areas for the Entrusted Portion of Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Stage 2.

1.2 Construction Programme and Activities

- 1.2.1 The construction programme is presented in **Appendix A**. The major construction activities undertaken in the reporting quarter are summarized below:
- Cable Detection and Trial Trenches;
 - Remaining Works on New Footbridge;
 - Noise Barrier Construction;
 - Road Pavement Works;
 - Water main laying works (on Grade and on bridge deck);
 - Installation of Noise barrier steel column & panel, and sign gantry (on Grade and on bridge deck);
 - Construction of Pavilion and Pai Lau;
 - Parapet Installation on bridge deck;
 - Road Drainage Work;

- Waterproofing works on bridge deck;
- Construction of Profile Barrier & Planter Wall on Bridge Deck;
- Bitumen paving on bridge deck;
- Installation of deck cell light inside the bridge deck;
- Installation of movement joint on the bridge
- Construction of retaining wall; and
- Landscaping works.

2 Project Organisation

2.1.1 The project organization structure is shown in **Appendix B**. The key personnel contact names and numbers for the Project, together with the general enquiry hotline, are summarised in **Table 2.1**.

Table 2.1 Contact Information of Key Personnel

Party	Role	Position	Name	Telephone	Fax
AECOM	Engineer's Representative	Senior Resident Engineer	Mr. Alan Lee	2171 3303	2171 3498
		Resident Engineer (Environmental)	Mr. Perry Yam	2171 3350	
Mott MacDonald	Independent Environmental Checker (IEC)	IEC	Mr. Steven Tang	2828 5920	2827 1823
Chun Wo	Contractor	Site Agent	Mr. Daniel Ho	2638 6144	2638 7077
		Environmental Officer	Mr. Yang Ran	26386147	
		Environmental Supervisor	Mr. Franki Leung	2638 7005	
Meinhardt	Environmental Team (ET)	ET Leader	Mr. Fredrick Leong	2859 1739	2540 1580
Enquiry Hotline	General Enquiry	--	Ms Helena Mak	6355 1731	--

2.2 Purpose of the Report

2.2.1 This is the Quarterly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting period between 1 Aug 2018 and 31 Oct 2018.

3 SUMMARY OF EM&A REQUIREMENTS

3.1 Monitoring Requirements

3.1.1 In accordance with the Updated EM&A Manual, environmental parameters including Air Quality and Noise have been monitored. The specific parameters, monitoring

frequency and the respective Action and Limit Levels are given in **Table 3.1** and the location of the monitoring station is shown in the **Figure 2**.

Table 3.1 Monitoring Parameter

Parameter	Unit	Action Level	Limit Level	Frequency
Air Quality				
1-hour TSP	µg/m ³	292.7	500	Three times every 6 days
24-hour TSP	µg/m ³	170.3	260	Once every 6 days
Construction Noise				
Leq 30min	dB(A)	When one documented valid complaint is received	75	Once every Week

Temporary Suspension of Box Culvert Works and Water Quality Monitoring

3.1.2 The box culvert works have been completed in the end of March 2017. The 4-week post construction water quality monitoring has been completed in the end of April 2017 in the same manner as the impact monitoring.

3.2 Environmental Mitigation Measures

3.2.1 Environmental mitigation measures have been recommended in the EM&A Manual and are given in **Appendix C**. The implementation status for the reporting quarter is also given in the Appendix.

4 SUMMARY OF EM&A MONITORING DATA

4.1 Monitoring Data

4.1.1 Monitoring has been conducted in accordance with the specification in the EM&A Manual in the reporting quarter. Meteorological data for the reporting quarter have been extracted from Hong Kong Observatory and are given in **Appendix D**. Monitoring data with graphical presentation for the reporting quarter have been given in **Appendix E**. A summary on the monitoring results has also been given in **Table 4.1**.

Table 4.1 Summary of Monitoring Data in the Reporting Quarter

Monitoring Location	Minimum	Maximum	Average
Air Quality			
1 hour Total Suspended Particulate			
SR77	68.1µg/m ³	176.6µg/m ³	111.4µg/m ³
24 hour Total Suspended Particulate			
SR77	14.4µg/m ³	105.5µg/m ³	58.2µg/m ³
Construction Noise			
SR77	69.5(A)	74.5dB(A)	72.3dB(A)

4.2 Summary of Monitoring Exceedances

4.2.1 The number of exceedances event recorded in the reporting quarter is summarized in **Table 4.2**.

Table 4.2 Summary of Exceedance Events in the Reporting Quarter

Parameter	Criteria	Number of Exceedances Events	Number of Project Related Exceedance Events
Air Quality			
1-hour Total Suspended Particulates	Action Level	0	0
	Limit Level	0	0
24-hour Total Suspended Particulates	Action Level	0	0
	Limit Level	0	0
Construction Noise			
Leq 30min	Action Level	0	0
	Limit Level	0	0
	Limit Level	0	0

4.2.2 No exceedance of Action Level and Limit level for 1-hour TSP and 24-hour TSP monitoring were recorded at SR77 in the reporting quarter.

4.2.3 No exceedance of noise monitoring was recorded at SR77 in the reporting quarter.

4.2.4 The Contractor has been reminded to strengthen the mitigation measures including:

Air Quality

- Slope and stockpile of dusty material shall be covered by impervious sheeting entirely.
- Faded NRMM label shall be replaced to colour label for all Non Road Mobile Machineries.
- Mud and debris shall be removed to prevent potential muddy water flow to public road.

Water Quality

- Trapped Water shall be pumped to avoid site runoff overflow to public.
- Rainwater and wastewater from construction site shall be treated properly before discharge.

Waste/ Chemical Management

- Secondary containment shall be provided for chemical to prevent potential leakage.

5 WASTE MANAGEMENT

5.1.1 The Contractor has registered as a chemical waste producer of the Project. The C&D materials and waste sorting were carried out on-site. Receptacles were provided for general refuse collection.

5.1.2 During the reporting quarter, a total of 5279m³ of excavated material has been generated. 3130m³ of inert C&D materials was disposed of at public fill to Tuen Mun Area 38, while 994m³ of inert C&D materials was reused on site. 360m³ of general refuse was disposed of at North East New Territories (NENT) Landfill. No plastics and no paper/cardboard packaging were collected by recycling contractor in the reporting quarter. No metals were collected by recycling contractor in the reporting quarter. No

chemical waste was collected by licensed contractor in the reporting quarter. Details of the waste management data are presented in **Appendix F**.

6 ENVIRONMENTAL NON-CONFORMANCE

- 6.1.1 No environmental non-compliance was recorded in the reporting quarter. No environmental complaint was received. No environmental related prosecution or notification of summons was received in the reporting quarter. The summary for the non-compliance, complaints and prosecutions is provided in **Appendix G**.

7 CONCLUSION, COMMENTS AND RECOMMENDATIONS

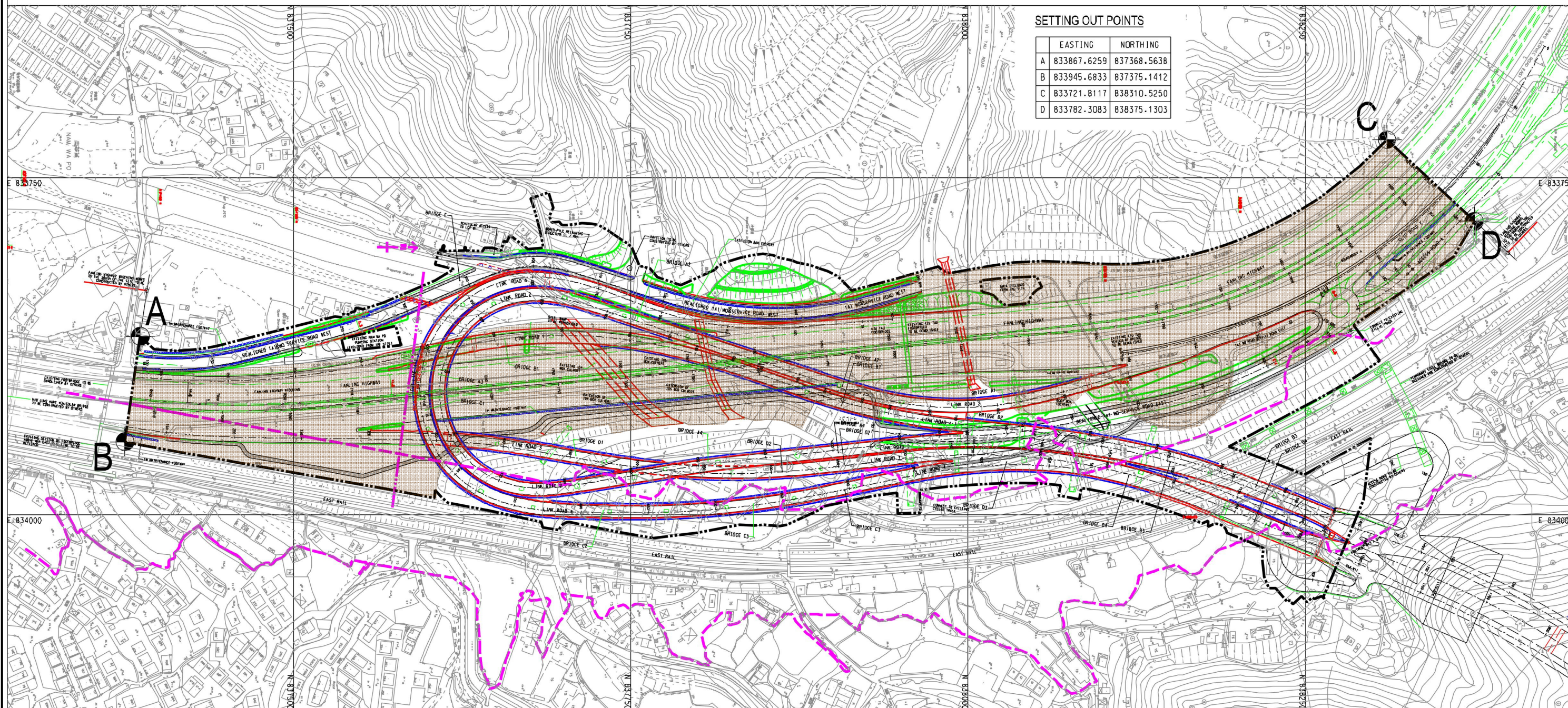
- 7.1.1 The EM&A programme was carried out by the ET in accordance with the EM&A Manual requirements. It is concluded from the environmental monitoring and audit works that adequate environmental mitigation measures have been implemented by the civil works contractors where appropriate in the reporting quarter.
- 7.1.2 In the reporting quarter, no exceedance event was recorded.
- 7.1.3 No environmental non-compliance was recorded in the reporting quarter. No environmental complaints were received in the reporting quarter. No environmental related prosecution or notification of summons was received in the reporting quarter.
- 7.1.4 The box culvert works have been completed in the end of March 2017. The 4-week post construction water quality monitoring has been completed in the end of April 2017 in the same manner as the impact monitoring

Figure

Contract No. CV/2012/09
 Liantang / Heung Yuen Wai Boundary Control Point
 Site Formation and Infrastructure Works - Contract 3



俊和建築工程有限公司
 CHUN WO CONSTRUCTION & ENGINEERING CO., LTD.



CV/201209-T-CWC-SK-001g_AD_edit.dgn 22/1/2014 17:10:34

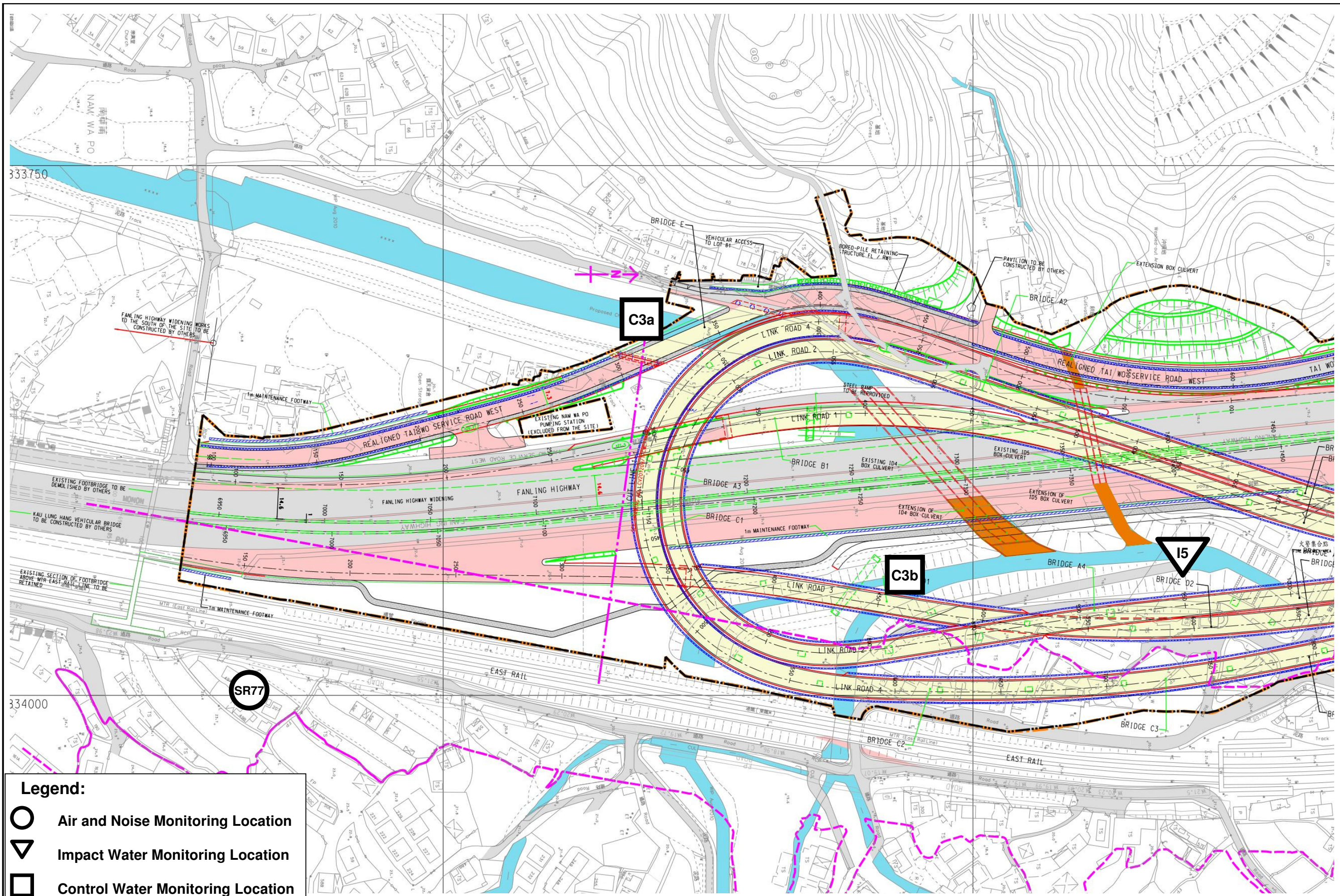
Legend:

 Works Area for Entrusted Portion



Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

Figure 1: Demarcation of Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling – Stage 2






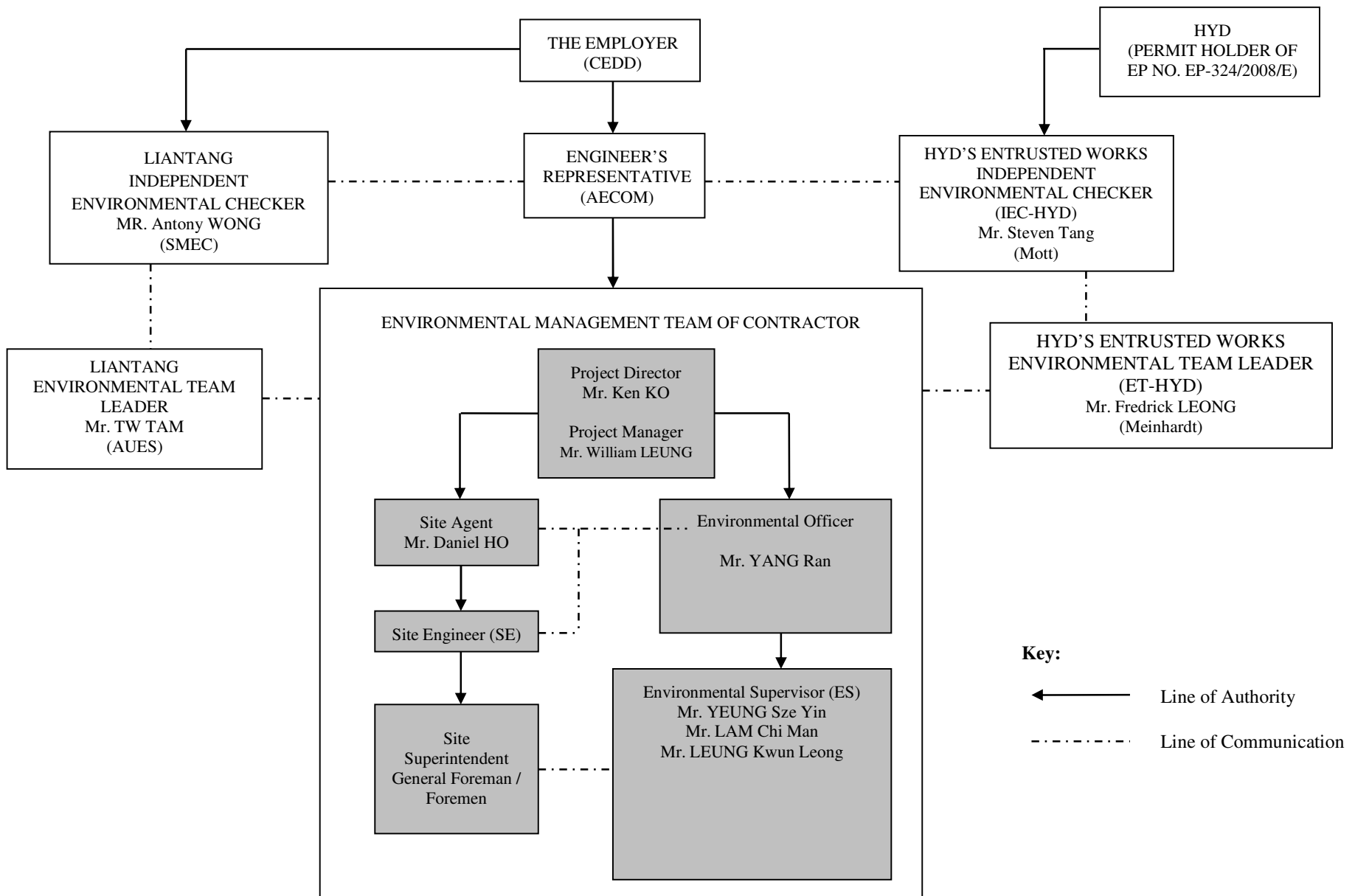
- Legend:**
-  Air and Noise Monitoring Location
 -  Impact Water Monitoring Location
 -  Control Water Monitoring Location

Figure 2: Environmental Monitoring Locations

Appendix A Construction Programme

Appendix B

Project Organization Structure



Appendix C Implementation Schedule of Environmental Mitigation Measures (EMIS)

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
Air Quality				
Air Quality during Construction	<ul style="list-style-type: none"> Restricting heights from which materials are dropped, as far as practicable to minimize the fugitive dust arising from unloading/loading. All stockpiles of excavated materials or spoil of more than 50m³ shall be enclosed, covered or dampened during dry or windy conditions. Effective water sprays shall be used to control potential dust emission sources such as unpaved haul roads and active construction areas. All spraying of materials and surfaces shall avoid excessive water usage. Vehicles that have the potential to create dust while transporting materials shall be covered, with the cover properly secured and extended over the edges of the side and tail boards. Materials shall be dampened, if necessary, before transportation. Travelling speeds shall be controlled to reduce traffic induced dust dispersion and re-suspension within the site from the operating haul trucks. Vehicle washing facilities shall be provided to minimise the quantity of material deposited on public roads. 	During Construction	Contractor	✓ Rem. ✓ ✓ ✓ ✓ ✓ ✓
Air Quality during Operation	Not required	N/A	N/A	N/A
Noise				
Noise during Construction	<ul style="list-style-type: none"> Use of silenced plant or plant equipped with mufflers or dampers in substitute of ordinary plant. Reduce the number of equipment and their percentage on-time. 	During Construction	Contractor	✓ ✓
Noise during Operation	Not required	N/A	N/A	N/A
Water Quality				
Water Quality during Construction	<u>Road Widening Works, Earthworks and Culvert Extension Works</u> <ul style="list-style-type: none"> Wastewater generated from any concrete batching washdown of equipment or similar activities should be discharged into foul sewers, after the removal of settleable solids, and pH adjustment as necessary. All sewage discharges from the study area should meet the TM standards and approval from EPD through the licensing process is required. Sand traps, oil interceptors and other pollution prevention installations should be provided, properly cleaned and maintained. 	During Construction	Contractor	Obs. ✓

Notes (#): ✓ – Compliance; Rem – Reminder; Obs – Observation; N/C – Non Compliance; N/A – Not Applicable

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	<ul style="list-style-type: none"> all debris should be covered entirely by impervious sheeting or stored in a sheltered debris collection area. <p><u>Surface Run-off</u></p> <p>In general, mitigation measures shall be in accordance with ProPECC PN1/94 on 'Construction Site Drainage'. Key measures include:</p> <ul style="list-style-type: none"> Bund and cover stockpiles to avoid run-off; Channel any run-off through a system of oil, grease and sediment / silt traps and reuse water on site where ever practical; All vehicle maintenance to be undertaken within a bunded area; and Maximise vegetation retention on-site to maximise absorption (minimise transport). 	During Construction	Contractor	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>
Ecology during Operation	<ul style="list-style-type: none"> To conduct compensatory ecological planting as specified in the latest landscape plans approved by EPD (Clause 2.6 of the Environmental Permit refers). 	During Construction and operation	Contractor (during construction) / LCSD* (during operation)	N/A
Landscape and Visual				
Landscape and Visual during Construction	<p><u>Preservation of Existing Vegetation</u></p> <ul style="list-style-type: none"> Trees identified for retention within the project limit would be protected during the works The tree transplanting and planting works shall be implemented by approved Landscape Contractors 	During Construction	Contractor	<p>✓</p> <p>✓</p>

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	<p><u>Temporary Works Areas</u></p> <ul style="list-style-type: none"> Where feasible the works areas would be screened using hoarding and existing vegetation would be retained where possible to reduce the landscape and visual impacts arising from the construction activity. The landscape of these works areas would be restored following the completion of the construction phase. <p><u>Hoarding</u></p> <ul style="list-style-type: none"> A hoarding would be erected where practicable in the most visually sensitive locations to screen the temporary construction works from the local VSRs. <p><u>Top Soils</u></p> <ul style="list-style-type: none"> The works will result in disturbance to extensive areas of topsoil. Topsoil worthy of retention should be stockpiled for use following completion of the civil engineering works. It should either be temporarily vegetated with hydroseeded grass or turned over on a regular basis. <p><u>Protection of Important Landscape Features</u></p> <ul style="list-style-type: none"> Important features such as temples, Island House and kilns within the study area, although remote from the proposed works retained and adequately protected. 	During Construction	Contractor	✓
		During Construction	Contractor	✓
		During Construction	Contractor	N/A
		During Construction	Contractor	N/A
Landscape and Visual during Operation	Not required.	N/A	N/A	N/A

Appendix D Meteorological Data Extracted from Hong Kong Observatory

Daily Extract of Meteorological Observations , August 2018

Day	Hong Kong Observatory							
	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)				
01	1004.6	32.4	29.9	27.9	25.7	78	76	2.7
02	1003.8	32.9	30.0	26.6	25.6	78	79	6.1
03	1003.4	31.8	30.1	29.1	25.6	77	86	Trace
04	1004.7	32.5	29.8	27.3	25.7	79	80	5.0
05	1005.9	33.1	30.3	28.9	25.8	77	84	0.5
06	1005.4	33.8	30.2	28.8	25.5	76	84	0.0
07	1004.4	34.2	30.0	28.4	25.6	78	78	0.0
08	1004.2	33.9	30.3	27.1	25.4	75	72	0.5
09	1003.3	33.6	30.4	29.2	25.1	74	79	Trace
10	1001.7	29.5	27.2	26.0	25.9	92	91	47.9
11	998.7	28.2	27.0	25.8	25.9	93	90	51.9
12	996.5	28.1	26.9	25.8	25.7	93	90	18.9
13	996.3	32.6	28.9	27.3	25.8	84	80	0.1
14	996.2	29.9	27.6	26.4	25.9	90	89	32.9
15	999.2	30.9	28.2	26.4	25.6	86	88	2.2
16	1000.1	29.0	27.8	26.7	25.9	89	88	3.2
17	1000.2	28.3	27.2	25.5	25.5	91	89	36.1
18	1001.4	30.9	28.4	25.9	25.3	84	88	21.8
19	1002.5	30.4	28.6	26.4	25.6	84	89	31.2
20	1002.3	30.5	27.8	26.1	25.7	88	91	61.1
21	1000.2	30.2	28.3	26.7	25.6	86	83	25.7
22	1000.1	31.8	28.5	24.7	25.2	83	71	26.4
23	1001.7	30.9	27.7	24.6	25.2	86	86	24.9
24	1001.6	31.9	29.1	25.6	25.6	82	83	0.1
25	999.8	32.9	30.3	27.8	24.8	73	66	0.0
26	999.5	31.4	28.9	25.5	24.4	77	86	80.2
27	1001.3	29.9	27.0	25.2	24.5	87	89	27.3
28	1002.2	29.2	26.3	25.2	24.9	93	93	71.6
29	1002.5	29.3	27.4	26.1	25.5	89	89	23.3
30	1005.5	28.9	28.0	26.9	25.6	87	90	6.3
31	1009.3	29.0	27.9	27.0	25.6	88	89	7.2
Mean/Total	1001.9	31.0	28.6	26.7	25.5	84	84	615.1
Normal [§]	1005.2	31.1	28.6	26.6	25.0	81	69	432.2

Trace means rainfall less than 0.05 mm

§ 1981-2010 Climatological Normal

Daily Extract of Meteorological Observations , September 2018

Day	Hong Kong Observatory							
	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)				
01	1009.9	27.9	26.3	25.0	25.2	93	89	32.0
02	1007.9	29.9	26.8	24.6	24.5	88	76	9.8
03	1006.9	30.5	27.7	25.6	24.3	82	70	0.3
04	1005.7	32.0	29.1	27.0	25.3	80	40	0.0
05	1004.9	33.1	29.8	27.9	25.8	79	54	0.1
06	1005.4	31.8	29.6	28.2	26.1	82	77	0.0
07	1006.3	31.2	29.4	28.0	25.6	80	76	Trace
08	1008.6	29.6	27.4	25.6	23.8	81	86	24.6
09	1011.5	30.5	27.1	24.6	22.4	76	86	16.7
10	1012.5	28.3	26.1	24.3	22.4	80	83	0.2
11	1009.3	32.7	28.2	25.2	20.6	65	46	0.0
12	1007.7	28.7	27.8	26.9	23.6	78	87	Trace
13	1009.4	30.3	27.7	26.3	24.7	84	69	2.5
14	1009.2	31.7	28.8	26.7	24.6	78	72	0.0
15	1002.8	35.1	30.7	26.8	23.1	65	59	Trace
16	990.9	31.8	26.4	23.6	23.6	86	97	167.5
17	1008.6	30.4	27.5	25.8	25.4	89	93	12.0
18	1013.7	31.8	28.2	26.5	25.3	85	65	1.2
19	1012.7	31.4	28.6	26.2	24.0	77	43	0.0
20	1011.0	31.9	29.0	27.0	24.3	77	63	0.0
21	1011.6	31.9	29.2	27.4	23.4	71	33	0.0
22	1013.3	33.2	29.2	27.0	24.5	76	51	0.0
23	1013.1	32.4	29.0	27.6	24.7	78	76	Trace
24	1011.1	29.6	27.0	24.8	24.9	88	80	72.2
25	1009.9	30.2	27.0	24.8	23.1	80	82	34.5
26	1009.6	28.6	26.8	25.1	23.3	81	77	9.7
27	1009.8	30.2	27.3	26.0	22.9	77	88	Trace
28	1009.9	31.3	27.6	25.8	21.4	70	74	0.0
29	1008.9	31.3	27.4	24.3	18.8	60	26	0.0
30	1010.5	30.6	27.5	25.0	18.9	60	29	0.0
Mean/Total	1008.8	31.0	28.0	26.0	23.7	78	68	383.3
Normal [§]	1008.9	30.1	27.7	25.8	23.4	78	66	327.6

Trace means rainfall less than 0.05 mm

§ 1981-2010 Climatological Normal

Daily Extract of Meteorological Observations , October 2018

Day	Hong Kong Observatory							
	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)				
01	1013.9	29.6	26.8	23.2	20.6	70	70	2.9
02	1014.9	30.4	27.2	25.3	20.2	67	33	0.0
03	1015.3	30.5	26.9	25.0	20.3	68	30	0.0
04	1013.8	30.5	26.9	24.2	16.5	54	8	0.0
05	1012.1	31.4	27.1	23.6	12.1	40	16	0.0
06	1013.4	30.9	26.8	23.5	14.5	48	18	0.0
07	1014.7	30.5	27.1	25.1	20.9	69	43	0.0
08	1014.2	29.8	26.7	24.3	21.8	75	60	2.0
09	1013.7	29.3	26.5	25.1	22.4	78	72	0.6
10	1014.7	29.2	24.8	22.5	21.8	83	82	42.8
11	1017.6	24.7	23.2	22.3	17.9	72	88	0.0
12	1018.9	27.1	23.8	22.0	18.6	73	85	0.3
13	1017.5	26.8	24.7	22.7	19.2	72	86	0.4
14	1015.5	27.3	25.3	23.6	21.3	79	82	0.6
15	1014.6	27.9	25.6	24.3	22.6	84	83	31.4
16	1013.2	25.8	24.3	23.2	22.8	92	91	8.9
17	1012.5	25.2	23.5	21.9	20.6	84	90	1.5
18	1014.7	23.9	22.5	20.9	20.3	87	91	12.6
19	1017.2	26.0	24.2	23.0	19.9	77	87	0.2
20	1018.6	24.9	24.0	23.3	19.9	78	86	Trace
21	1017.6	27.3	24.8	23.2	20.5	77	49	Trace
22	1015.9	27.4	25.0	23.7	21.5	81	62	Trace
23	1016.5	27.4	25.3	24.1	21.3	79	78	0.1
24	1016.8	27.4	25.2	24.0	21.4	80	78	Trace
25	1017.0	27.7	25.5	24.4	21.6	79	54	0.0
26	1016.5	28.6	26.3	23.9	21.5	76	41	0.0
27	1018.1	27.9	25.4	23.7	17.4	61	53	0.0
28	1017.4	27.5	24.3	21.7	14.3	54	13	0.0
29	1015.1	28.9	25.2	22.2	8.5	35	4	0.0
30	1014.8	28.5	25.7	23.4	8.2	33	24	0.0
31	1014.2	27.2	25.0	22.9	9.1	37	83	0.0
Mean/Total	1015.5	28.0	25.3	23.4	18.7	69	59	104.3
Normal§	1014.1	27.8	25.5	23.7	20.2	73	58	100.9

Trace means rainfall less than 0.05 mm

§ 1981-2010 Climatological Normal

Appendix E

Environmental Monitoring Data for Air, Noise and Water Quality

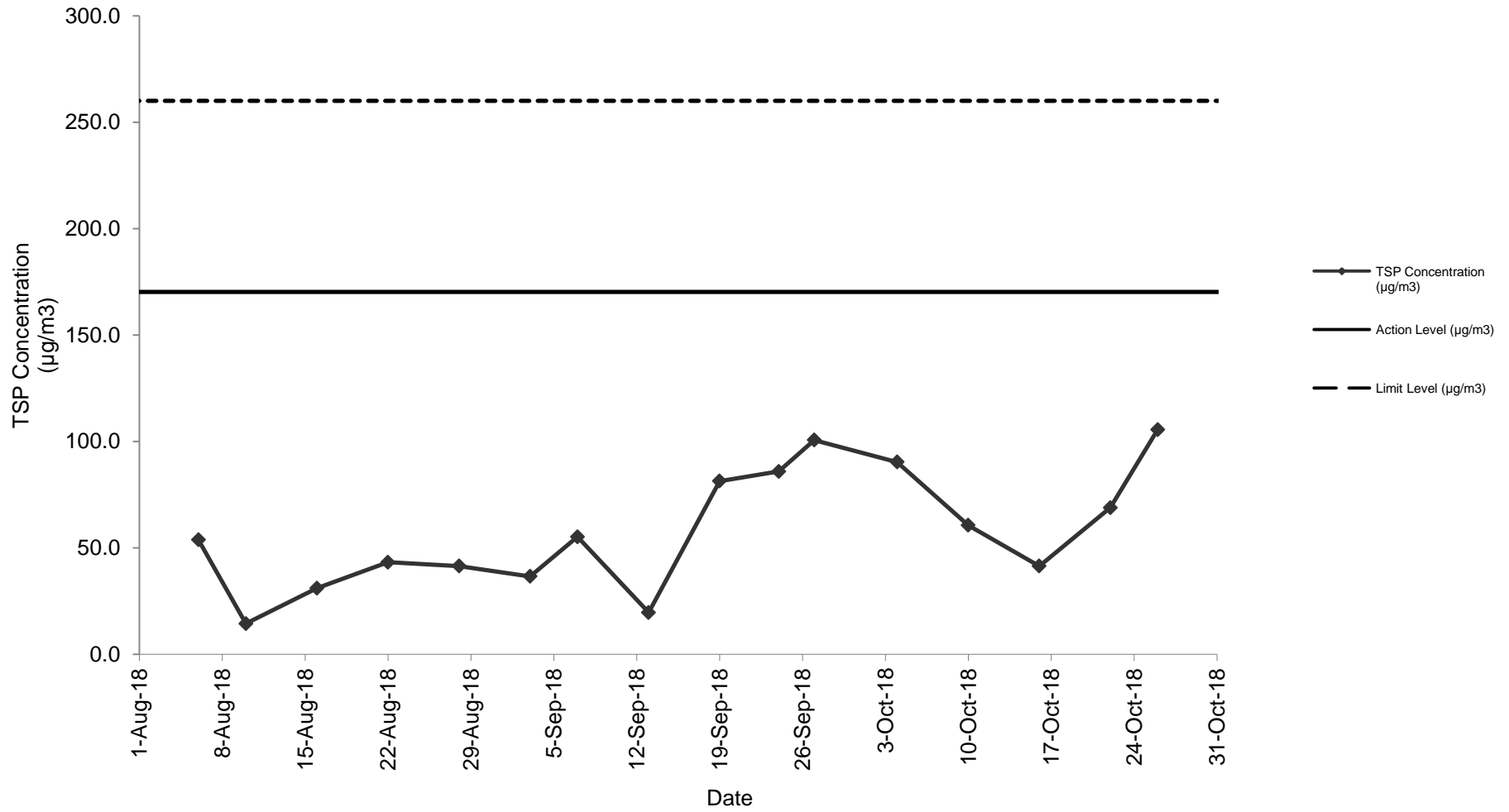
Appendix E
Air Quality Monitoring Results and their Graphical Presentation

24-Hour TSP Monitoring Result at Station: SR77

Sampling Date	Weather Condition	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Flow Rate (m ³ /min)			Total Volume (m ³)	TSP Concentration (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)	Wind speed m/s	Wind direction
			Initial Wt.	Final Wt.	Wt. of Dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate	Initial	Final	Avg Flow Rate						
6-Aug-18	Cloudy	C160	2.8146	2.9265	0.1119	8685.67	8709.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	53.8	170.3	260.0	<5	N
10-Aug-18	Rainy	C162	2.8018	2.8318	0.0300	8712.67	8736.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	14.4	170.3	260.0	<5	N
16-Aug-18	Rainy	C164	2.8286	2.8932	0.0646	8739.67	8763.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	31.1	170.3	260.0	<5	N
22-Aug-18	Cloudy	C166	2.8124	2.9024	0.0900	8766.67	8790.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	43.3	170.3	260.0	<5	N
28-Aug-18	Cloudy	C168	2.8149	2.9012	0.0863	8793.67	8817.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	41.5	170.3	260.0	<5	N
3-Sep-18	Cloudy	C170	2.8293	2.9054	0.0761	8820.67	8844.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	36.6	170.3	260.0	<5	N
7-Sep-18	Fine	C172	2.8223	2.9371	0.1148	8847.67	8871.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	55.2	170.3	260.0	<5	N
13-Sep-18	Fine	C174	2.6738	2.7147	0.0409	8874.67	8898.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	19.7	170.3	260.0	<5	N
19-Sep-18	Cloudy	C176	2.6787	2.8479	0.1692	8901.67	8925.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	81.4	170.3	260.0	<5	N
24-Sep-18	Fine	C178	2.6814	2.8601	0.1787	8928.67	8952.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	85.9	170.3	260.0	<5	N
27-Sep-18	Fine	C180	2.6498	2.8591	0.2093	8955.67	8979.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	100.6	170.3	260.0	<5	N
4-Oct-18	Sunny	C182	2.6644	2.8523	0.1879	8982.67	9006.67	24.00	51.0	51.0	51.0	1.44	1.44	1.44	2079.59	90.4	170.3	260.0	<5	N
10-Oct-18	Cloudy	C184	2.6874	2.8135	0.1261	9009.67	9033.67	24.00	51.0	51.0	51.0	1.44	1.44	1.44	2079.59	60.6	170.3	260.0	<5	N
16-Oct-18	Cloudy	C186	2.6781	2.7644	0.0863	9036.67	9060.67	24.00	51.0	51.0	51.0	1.44	1.44	1.44	2079.59	41.5	170.3	260.0	<5	N
22-Oct-18	Cloudy	C188	2.6392	2.7825	0.1433	9063.67	9087.67	24.00	51.0	51.0	51.0	1.44	1.44	1.44	2079.59	68.9	170.3	260.0	<5	N
26-Oct-18	Sunny	C190	2.6519	2.8714	0.2195	9090.67	9114.67	24.00	51.0	51.0	51.0	1.44	1.44	1.44	2079.59	105.5	170.3	260.0	<5	N

Summary For the Reporting Quarter (Aug 2018 - Oct 2018)	
Average	58.2
Minimum	14.4
Maximum	105.5

24-Hour TSP Monitoring Result at Station: SR77 (August 2018 - October 2018)



Appendix E

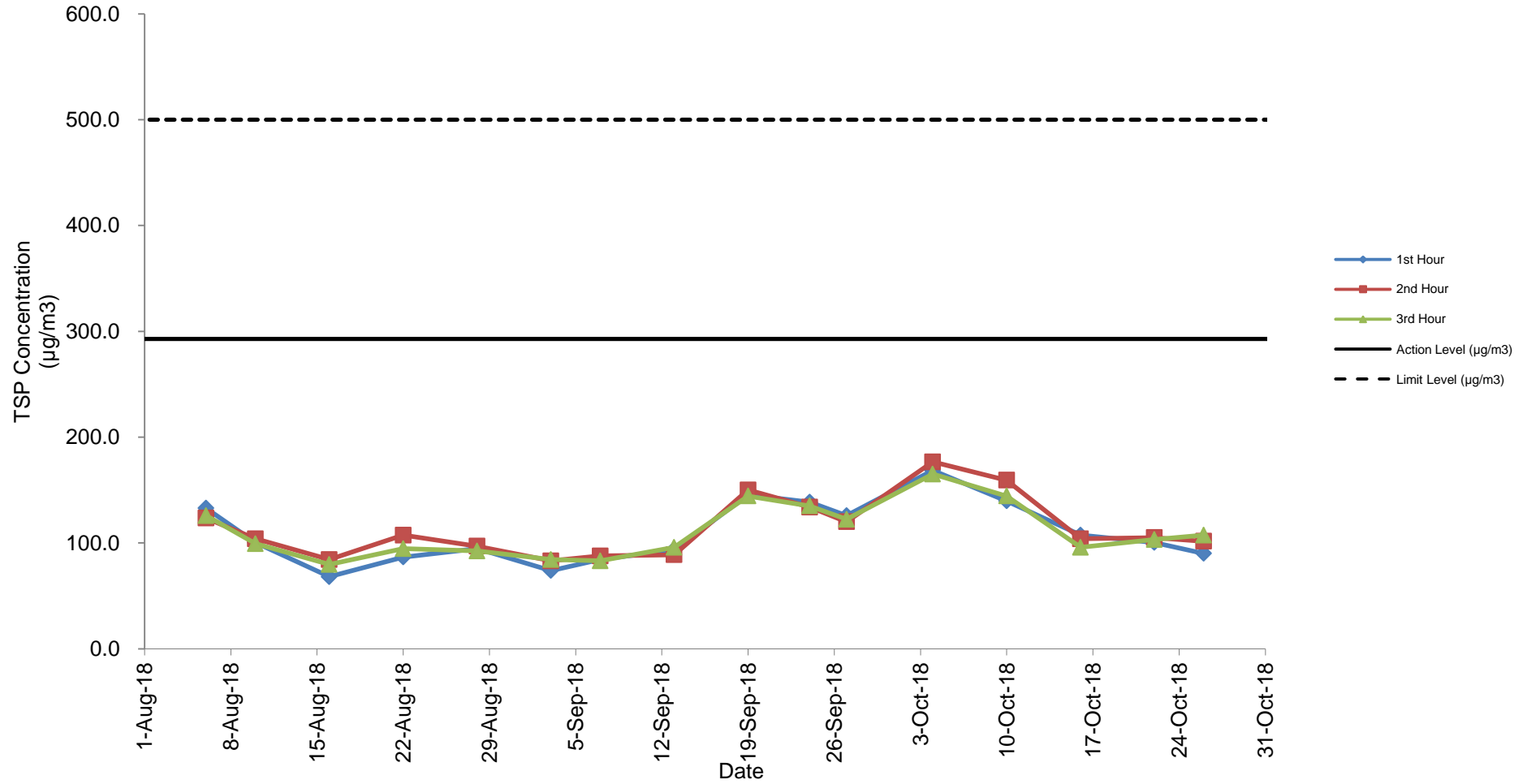
Air Quality Monitoring Results and their Graphical Presentation

1-Hour TSP Monitoring Result at Station: SR77

Date	Weather Condition	Time			Conc.(µg/m ³)			Action Level (µg/m ³)	Limit Level (µg/m ³)
					1 st Hour	2 nd Hour	3 rd Hour		
6-Aug-18	Cloudy	9:00		12:08	132.7	123.5	125.8	292.7	500.0
10-Aug-18	Rainy	9:00		12:08	100.4	103.9	99.3	292.7	500.0
16-Aug-18	Rainy	9:00		12:11	68.1	84.2	79.6	292.7	500.0
22-Aug-18	Cloudy	9:00		12:08	86.6	107.3	94.6	292.7	500.0
28-Aug-18	Cloudy	9:00		12:11	94.6	96.9	92.3	292.7	500.0
2018-09-03	Cloudy	9:00	-	12:08	73.9	83.1	84.2	292.7	500.0
2018-09-07	Fine	9:00	-	12:08	84.2	87.7	83.1	292.7	500.0
2018-09-13	Fine	9:00	-	12:08	93.5	88.9	95.8	292.7	500.0
2018-09-19	Cloudy	9:00	-	12:07	145.4	150.0	144.3	292.7	500.0
2018-09-24	Fine	9:00	-	12:08	138.5	133.9	135.0	292.7	500.0
2018-09-27	Fine	9:00	-	12:08	125.8	120.0	122.3	292.7	500.0
4-Oct-18	Sunny	9:00	-	12:08	168.5	176.6	165.0	292.7	500.0
10-Oct-18	Cloudy	9:00	-	12:07	139.6	159.3	144.3	292.7	500.0
16-Oct-18	Cloudy	9:00	-	12:09	107.3	103.9	95.8	292.7	500.0
22-Oct-18	Cloudy	9:00	-	12:07	100.4	105.0	103.2	292.7	500.0
26-Oct-18	Sunny	9:00	-	12:08	90.0	101.6	107.3	292.7	500.0

Summary For the Reporting Quarter (Aug 2018 - Oct 2018)	
Average	111.4
Minimum	68.1
Maximum	176.6

1-Hour TSP Monitoring Result at station: SR77 (August 2018 - October 2018)

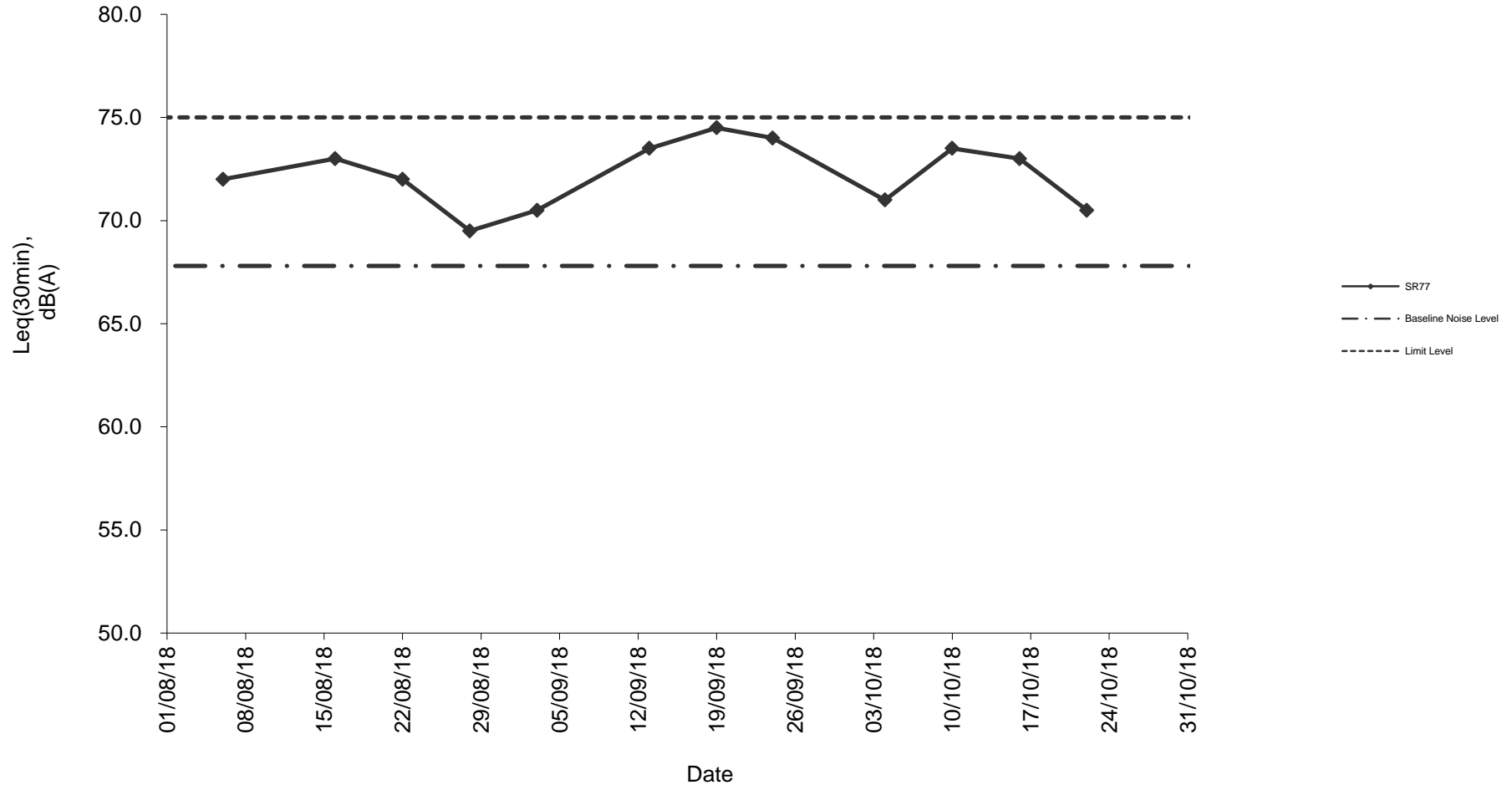


Noise Monitoring Result at SR77

Date	Weather Condition	Start Time	End Time	Measured Noise Level (dB(A))*			Baseline Corrected Level, dB(A)**	Baseline Noise Level (dB(A)), Leq(30min)	Limit Level dB(A)	Exceedance (Y / N)
				L10(30min)	L90(30min)	Leq(30min)				
2018-08-06	Cloudy	11:15	11:45	80.5	60.0	72.0	-	67.8	75.0	N
2018-08-16	Rainy	16:00	16:30	86.0	60.5	73.0	-	67.8	75.0	N
2018-08-22	Cloudy	11:30	12:00	82.0	64.0	72.0	-	67.8	75.0	N
2018-08-28	Cloudy	11:30	12:00	77.5	64.5	69.5	-	67.8	75.0	N
2018-09-03	Cloudy	11:15	11:45	75.0	66.5	70.5	-	67.8	75.0	N
2018-09-13	Fine	11:15	11:45	78.5	66.0	73.5	-	67.8	75.0	N
2018-09-19	Cloudy	11:15	11:45	75.5	74.0	74.5	-	67.8	75.0	N
2018-09-24	Fine	11:30	12:00	82.0	64.5	74.0	-	67.8	75.0	N
2018-10-04	Sunny	11:15	11:45	72.5	70.0	71.0	-	67.8	75.0	N
2018-10-10	Cloudy	11:15	11:45	79.0	70.5	73.5	-	67.8	75.0	N
2018-10-16	Cloudy	11:15	11:45	80.5	65.5	73.0	-	67.8	75.0	N
2018-10-22	Cloudy	11:30	12:00	77.0	66.0	70.5	-	67.8	75.0	N

Summary For the Reporting Quarter (Aug 2018 - Oct 2018)	
Average	72.3
Minimum	69.5
Maximum	74.5

**Noise monitoring result: SR77
(August 2018 - October 2018)**



Appendix F

Waste Flow Table

Monthly Summary Waste Flow Table

Month	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Broken Concrete	Soil	Soil Reused in the Contract	Soil Reused in other Projects	Soil Disposed as Public Fill	Imported Fill	Metals	Paper/ cardboard packaging (Note 3)	Plastics	Chemical Waste	General Refuse (Note 2)
Unit	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in '000m ³)	(in m ³)	(in '000m ³)
Aug-18	2.372	0.478	1.894	0.613	-	1.281	0.193	-	-	-	-	0.095
Sep-18	1.709	0.361	1.348	0.381	-	0.967	0.272	-	-	-	-	0.150
Oct-18	1.198	0.316	0.882	0.000	-	0.882	0.000	-	-	-	-	0.115
Total	5.279	1.155	4.124	0.994	-	3.130	0.465	-	-	-	-	0.360

- Note:
1. Assume the density of soil fill is 2 ton/m³.
 2. Assume the density of rock and broken concrete is 2.5 ton/m³.
 3. Assume each truck of C&D wastes is 5m³.
 4. The inert C&D materials except slurry and bentonite are disposed at Tuen Mun 38.
 5. The slurry and bentonite are disposed at Tseung Kwun O 137.
 6. The non-inert C&D wastes are disposed at NENT.
 7. Assume the density of metal is 7,850 kg/m³.

Appendix G Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Cumulative Complaint Log

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
C131126	26, November, 2013	Mr. Tony Hung from WWF	Mat Wat River (works sites for box culvert extension)	Suspected unauthorised discharge of water from a construction site to Ma Wat River, Tai Wo Service Road East, Tai Po	<p>It was found that the water leaving the end of the steel pipes was the diverted water from the upstream of the existing box culverts, instead of being discharged from the construction works sites.</p> <p>An EM&A Programme is being undertaken to monitoring the environmental performance of the construction works, and the Contractor has also implemented appropriate mitigation measures to avoid silt-laden runoff discharging from the works sites into the river.</p> <p>The complaint is considered an invalid complaint under this Project.</p>	Completed

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
C141120	20 November, 2014	EPD	Ng Tung River and Ma Wat River nearby the site of the Liantang/ Heung Yuen Wai BCP Project (Contract Number CV/2012/09)	At Bridge NF426 in Fanling, the whole Ng Tung River showed milky and suspected illegal discharge by nearby factory has undertaken. (粉嶺近天橋編號 NF426 梧桐河整條河河水呈奶白色懷疑附近有工廠非法排放污水)	<p>Water Supplies Department (WSD) conducted a washout procedure on 20 November 2014 at about 9:30am to flush the newly installed water pipe of diameter of 1400mm which has recently finished disinfection. It is understood that the procedure has lasted for about 1 hour and large amount of freshwater has been discharged into the Ma Wat River through a washout port.</p> <p>Although water was observed seeping from the gantry switch and flew into the works sites, the area is a sump pit and the water was unlikely to run off and entered the river directly. As such, it is anticipated that only freshwater has been discharged into Ma Wat River through the washout port.</p> <p>Both site inspections conducted by the ET before the complaint (19 November 2014), and after the complaint (24 November 2014) did not identify any deficiencies on environmental mitigation measures. Also, there were no rains during the period and the risk of construction site run-off is considered minimal.</p>	Completed

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
					<p>The water from the Ma Wat Channel adjoins the Ng Tung River before passing through the complaint location, so other pollution sources may also occur at upstream of Ng Tung River</p> <p>The complaint is considered unlikely due to the construction works of this project.</p>	
C171228	28 December, 2017	1823	Kau Lung Hang and Hong Lok Yuen	<p>Air quality issue nearby Kau Lung Hang and Hong Lok Yuen area. Stockpiling within the Project area was observed to be uncovered, causing dust dispersion within the area. (大埔九龍坑附近的空氣污染問題嚴重。吐露港公路蓮塘口岸隧道工程經常見到沙泥沒有覆蓋，導致沙土飛揚散佈九龍坑，康樂園一帶，造成極大困擾與明顯健康風險。要求立即改善，懲罰相</p>	<p>The Environmental Team (ET) was informed of the complaint through Chun Wo and CEDD via 1823 online-enquiry/ complaint form received on 28 December 2017 at 9:04am. Investigation was triggered in accordance with the procedures as specified in Section 7.3 of the EM&A Manual. A joint investigation by the ET and the IEC was conducted on 28 December 2017.</p> <p>As advised by the Contractor, no construction works were carried out during the public holiday.</p> <p>No exceedance of TSP level at the air monitoring station under this Contract was recorded in the past six months except 8 December 2017.</p>	

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
				<p>關建築商。附圖是該區狀況。昨日洗車，一日已經沙塵滿佈。)</p>	<p>Exceedance on 8 December 2017 was considered not project related as no major excavation works located close to the monitoring location at SR77.</p> <p>Based on the routine environmental site inspection and information provided by the Contractor, it is considered that dust suppression measures have been implemented to minimize dust nuisance arising from the works areas. Nonetheless, the ET and IEC will continue the auditing and reviewing of the Contractor's implementation of mitigation measures during the construction period.</p>	



**Meinhardt Infrastructure and
Environment Ltd**
邁進基建環保工程顧問有限公司

10/F Genesis
33-35 Wong Chuk Hang Road
Hong Kong
香港黃竹坑道33-35號
創協坊10樓

Tel 電話: +852 2858 0738
Fax 傳真: +852 2540 1580

mail@meinhardt.com.hk
www.meinhardt-china.com
www.meinhardtgroup.com