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

Annual EM&A Review Report

November 2018 to October 2019

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

Annual EM&A Review Report

(November 2018 to October 2019)

Certified by: Fredrick Leong

Position: Environmental Team Leader

Date: 21 February 2020

MOTT MACDONALD

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Your Reference

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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– Annual EM&A Report for November 2018 to October 2019 for the portion of Stage 2 works entrusted to CEDD under Contract No. CV/2012/09

11 February 2020
By Fax (2805 5028) & Hand

We refer to the Annual EM&A Report for November 2018 to October 2019 for the Project received on 24 January 2020 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	Mr. Chung Lok Chin	By Fax (2714 5198)
CEDD/BCP	Mr. Lu Pei Yu	By Fax (3547 1659)
AECOM	Mr. Gilbert Wong	By Fax (2251 0698)
Meinhardt	Mr. Fredrick Leong	By Fax (2559 1613)

Date	Revision	Prepared By	Checked By	Approved By
21 February 2020	0	WK CHIU Bobo HUI	Fredrick LEONG	Helen COCHRANE

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EXECUTIVE SUMMARY

This report documents the findings of EM&A works conducted during the period between November 2018 and October 2019.

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

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

No environmental non-compliance was noted. One environmental complaint was received, which was concluded that it was unlikely due to the construction works of this Project after investigations, was received. No environmental related prosecution or notification of summons was received in the reporting period.

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 October 2013) 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 master construction programme for the entire construction period is presented in **Appendix A**. The major construction activities undertaken in the reporting period are summarized below:

- Cable Detection and Trial Trenches;
- 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;
- Bitumen paving on bridge deck;
- Construction of retaining wall; and
- Landscaping works;
- Construction of Police Observation Platform on the Northbound Fanling Highway; and
- Remaining works of Kiu Tau footbridge.

1.3 Project Organisation

1.3.1 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 1.1**.

Table 1.1 Contact Information of Key Personnel

Party	Role	Position	Name	Tele-phone	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. Ken Lun	2638 6144	2638 7077
		Environmental Officer	Mr. Yip Yun Lam	2638 6147	
Meinhardt	Environmental Team (ET)	ET Leader	Mr. Fredrick Leong	2859 1739	2540 1580
Enquiry Hotline	General Enquiry	--	Ms Helena Mak	6355 1731	--

1.4 Purpose of the Report

1.4.1 This is the Annual EM&A Review Report which summaries the impact monitoring results and audit findings for the Project during the reporting period between November 2018 and October 2019.

2 SUMMARY OF EM&A REQUIREMENTS

2.1 Environmental Impact Hypothesis under Monitoring

2.1.1 The EIA Report concluded that with proper mitigation measures implemented, fugitive dust emission during construction phase would be controlled and will not exceed the acceptable criteria.

2.1.2 For construction noise, exceedances were predicted only at 2 schools (SR41 Wong Shiu Chi Middle School and SR45 HK Teacher's Association Secondary School) but

they are out of the scope of this EM&A Programme. Hence the EIA did not anticipate any noise exceedances during construction phase within the scope of this EM&A Programme.

2.1.3 The above criteria have been tested under this EM&A Programme during the reporting period.

2.2 Monitoring Requirements

2.2.1 In accordance with the Updated EM&A Manual, environmental parameters including air quality, noise have been monitored. The specific parameters, monitoring frequency and the respective Action and Limit Levels are given in **Table 2.1** and the location of the monitoring station is shown in the **Figure 2**.

Table 2.1 Monitoring Parameter

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

2.2.2 The Event and Action Plan for the occurrence of non-compliance of the criteria of the monitoring parameters is annexed in **Appendix C**.

2.3 Environmental Mitigation Measures

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

3 SUMMARY OF EM&A MONITORING DATA

3.1 Monitoring Data

3.1.1 Monitoring has been conducted in accordance with the specification in the EM&A Manual in the reporting period. Summary of meteorological condition for the reporting period have been extracted from Hong Kong Observatory and are given in **Appendix E**. Monitoring data with graphical presentation for the reporting period have been given in **Appendix F**. A summary on the monitoring results has also been given in **Table 3.1**.

Table 3.1 Summary of Monitoring Data in the Reporting Period

Monitoring Location	Minimum	Maximum	Average
Air Quality			
1-hour Total Suspended Particulate			
SR77	$38.7\mu g/m^3$	$219.3\mu g/m^3$	$134.2\mu g/m^3$
24-hour Total Suspended Particulate			
SR77	$19.1\mu g/m^3$	$164.2\mu g/m^3$	$75.9\mu g/m^3$

Monitoring Location	Minimum	Maximum	Average
Construction Noise			
SR77	63.0dB(A)	71.0dB(A)	65.9dB(A)

3.2 Summary of Monitoring Exceedances

3.2.1 The number of exceedance events recorded in the reporting period is summarized in **Table 3.2**.

3.2.2 Investigation for the exceedance event in the reporting period has been completed and the exceedance was concluded not related to the Project. No necessary remedial actions have been taken. The respective investigation report has been presented in the respective Monthly EM&A Report.

Table 3.2 Summary of Exceedance Events in the Reporting Period

Parameter		Number of Exceedance 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	1	0
	Limit Level	0	0
Construction Noise			
Leq 30min	Action Level	0	0
	Limit Level	0	0

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

Air Quality

- Stockpile of dusty material shall be covered by impervious sheeting entirely.
- Vehicle washing facility shall be provided at all site exits to wash away any dusty materials from vehicle before they leave the site.
- Mud and debris shall be removed to prevent potential muddy water flow to public road.

Chemical and Waste Management

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

4 ENVIRONMENTAL NON-CONFORMANCE

4.1 Summary of Environmental Non-Compliance

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

4.2 Summary of Environmental Complaints

4.2.1 No environmental complaint was received in the reporting period.

4.3 Summary of Environmental Summon and Successful Prosecutions

4.3.1 No environmental related prosecution or notification of summons was received in the reporting period. The cumulative statistics are provided in is provided in **Appendix G**.

5 REVIEW OF THE VALIDITY OF EIA PREDICTIONS

5.1.1 The EIA report predicted that with proper implementation of the mitigation measures for air and noise, environmental impact would be locally confined and controllable. During the reporting period, No exceedance was recorded and it is concluded that the EIA predictions are valid for the reporting period.

6 REVIEW OF EM&A PROGRAMME

6.1.1 The EM&A programme was considered successfully and adequately conducted during the course of the reporting period.

7 CONCLUSIONS

7.1.1 The EM&A programme were 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 period.

7.1.2 In the reporting period, No exceedance event has been recorded. No necessary remedial actions have been taken.

7.1.3 No environmental non-compliances were noted. No environmental complaint was received in the reporting period.

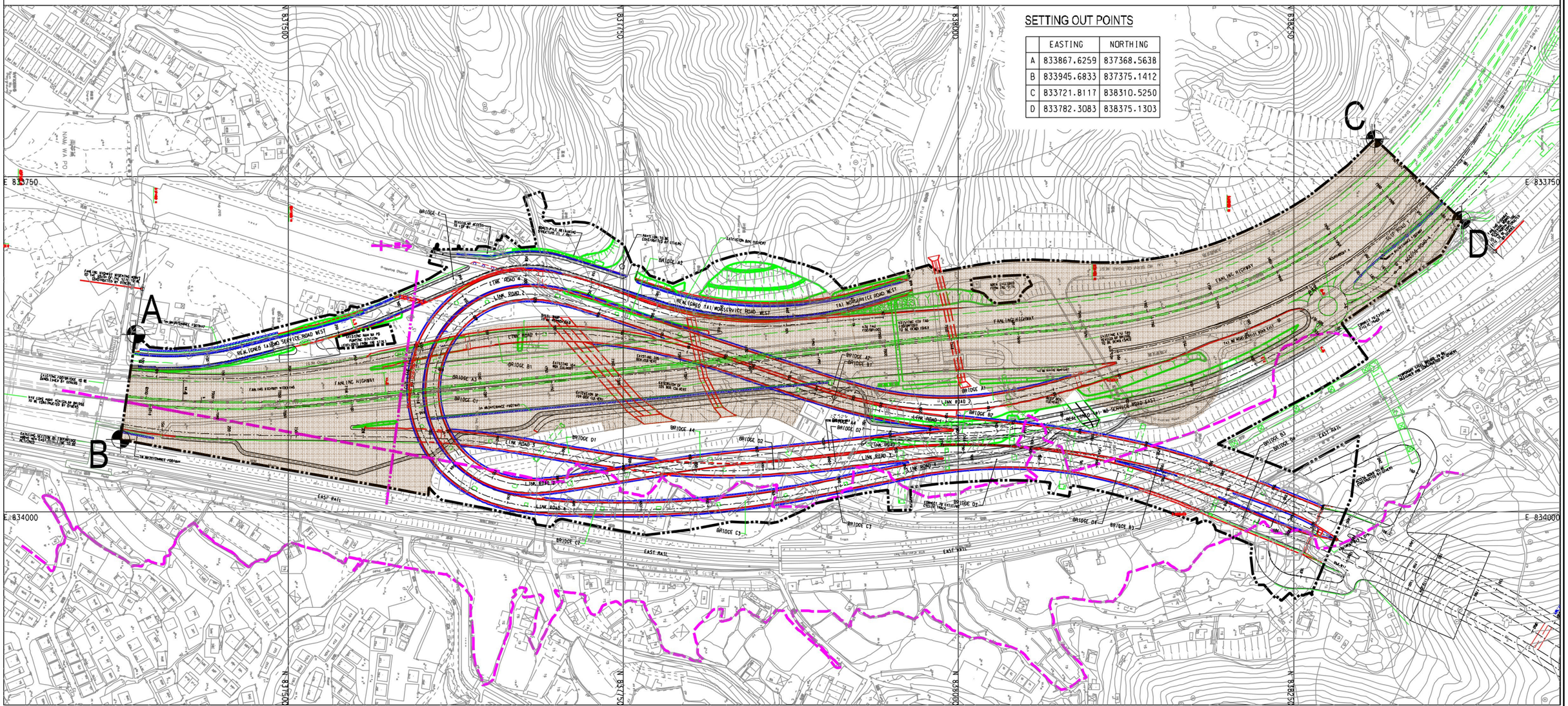
Figure

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.

SETTING OUT POINTS

	EASTING	NORTHING
A	833867.6259	837368.5638
B	833945.6833	837375.1412
C	833721.8117	838310.5250
D	833782.3083	838375.1303

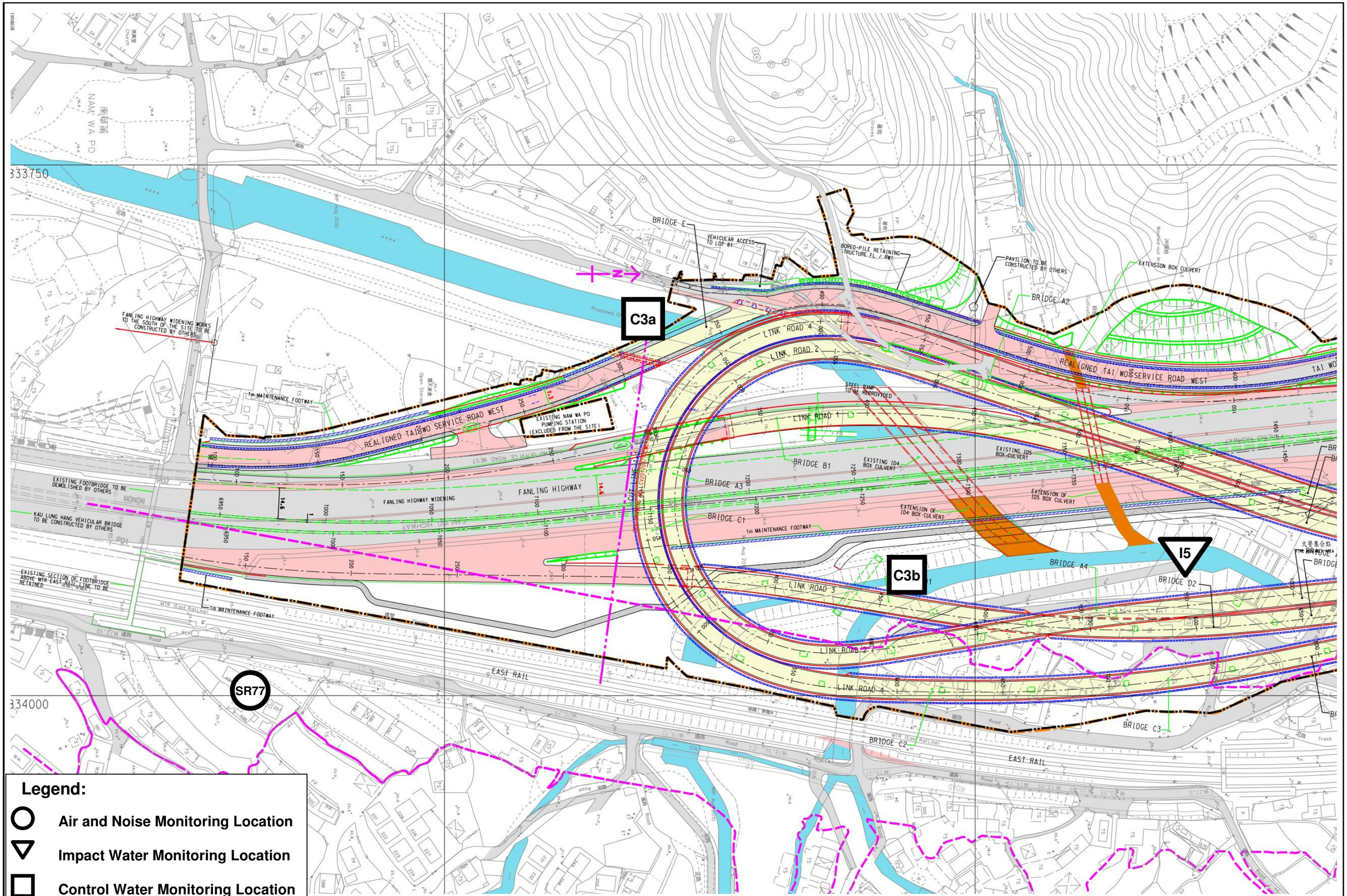


CV201209-T-CWC-SK-001g_AD_edit.dgn 22/1/2014 17:10:34

Legend:

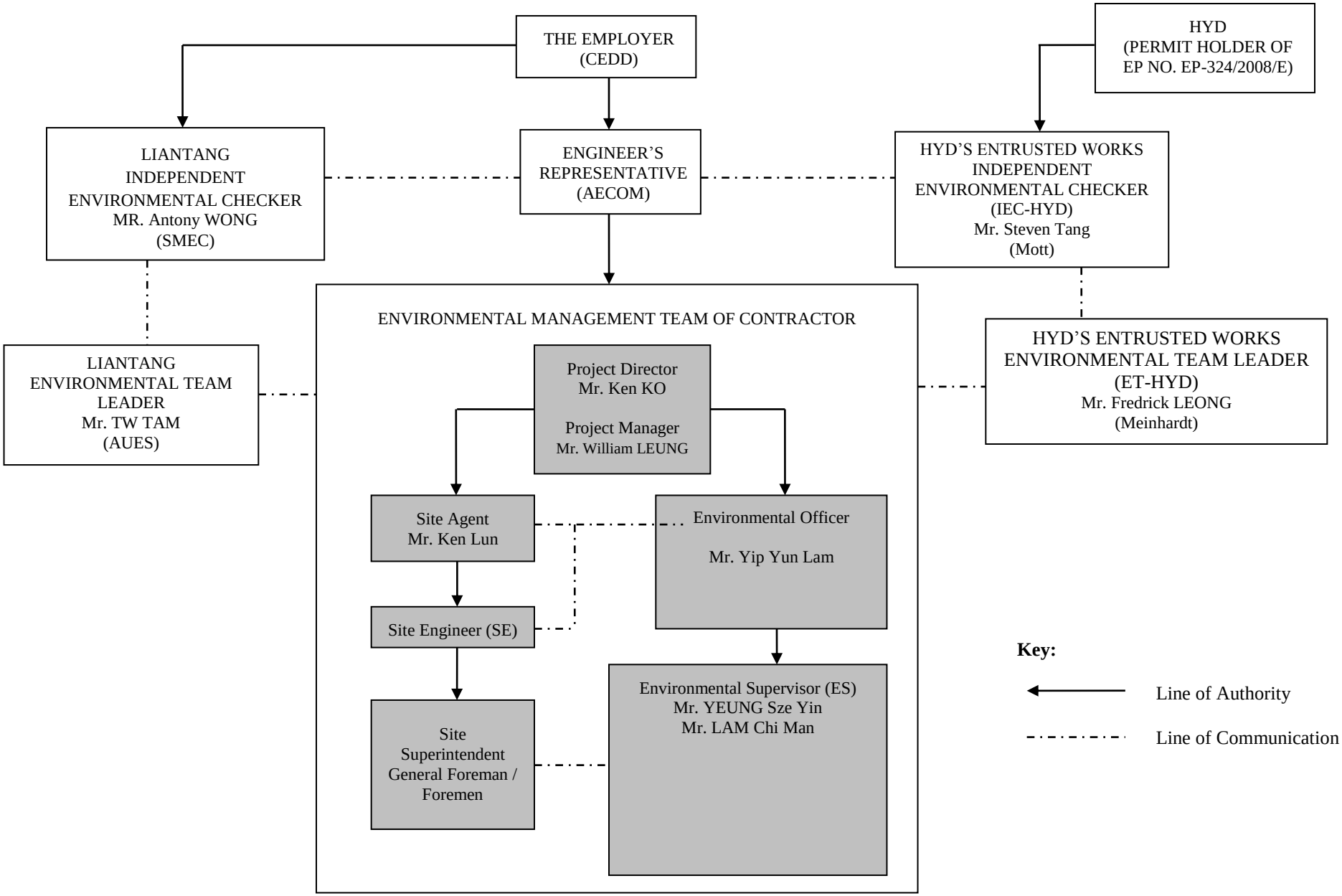
Works Area for Entrusted Portion

MEINHARDT	**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**



MEINHARDT	Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2	**Figure 2: Environmental Monitoring Locations**

Appendix B
Project Organization Structure


THE EMPLOYER
(CEDD)
HYD
(PERMIT HOLDER OF
EP NO. EP-324/2008/E)
LIANTANG
INDEPENDENT
ENVIRONMENTAL CHECKER
MR. Antony WONG
(SMEC)
ENGINEER'S
REPRESENTATIVE
(AECOM)
HYD'S ENTRUSTED WORKS
INDEPENDENT
ENVIRONMENTAL CHECKER
(IEC-HYD)
Mr. Steven Tang
(Mott)
ENVIRONMENTAL MANAGEMENT TEAM OF CONTRACTOR
LIANTANG
ENVIRONMENTAL TEAM
LEADER
Mr. TW TAM
(AUES)
Project Director
Mr. Ken KO
Project Manager
Mr. William LEUNG
HYD'S ENTRUSTED WORKS
ENVIRONMENTAL TEAM LEADER
(ET-HYD)
Mr. Fredrick LEONG
(Meinhardt)
Site Agent
Mr. Ken Lun
Environmental Officer
Mr. Yip Yun Lam
Site Engineer (SE)
Site
Superintendent
General Foreman /
Foremen
Environmental Supervisor (ES)
Mr. YEUNG Sze Yin
Mr. LAM Chi Man
Key:
Line of Authority
Line of Communication

Appendix C
Summary of Event and Action Plan

Event and Action Plan for Air Quality

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action level being exceeded by one sampling day	1. Identify source; 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.
Action level being exceeded by two or more consecutive sampling days	1. Identify source; 2. Inform IEC and ER; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily; 5. Discuss with IEC and Contractor on remedial actions required; 6. If exceedance continues, arrange meeting with IEC and ER; 7. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial actions to IEC within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Limit level being exceeded by one sampling day	1. Identify source; 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.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise 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. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Limit level being exceeded by two or more consecutive sampling days	1. Notify IEC, ER, Contractor, and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase frequency to daily; 5. Analyse Contractor's working procedures to determine possible mitigation to be; 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. Discus amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise 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 IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by ER until the exceedance is abated.

Event and Action Plan for Noise Quality

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action Level	1. Notify IEC and the Contractor. 2. Carry out investigation. 3. Report the results of investigation to IEC and the Contractor. 4. Discuss with the Contractor and formulate remedial measures. 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review with analysed results submitted by ET. 2. Review the proposed remedial measures by the Contractor and advise ER accordingly. 3. Supervise the implement of remedial measures.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC. 2. Implement noise mitigation proposals.
Limit Level	1. Notify IEC, ER, EPD and the Contractor. 2. Identify the 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, and EPD the causes & actions taken for the exceedances. 7. Assess effectiveness of the 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 Leader and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise ER accordingly. 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by the ER until the exceedance is abated.

Event and Action Plan for Water Quality

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action level being exceeded by one sampling day	1. Repeat in-situ measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor & ER; 4. Check monitoring data, all plant, equipment & contractor's working methods;	1. Check monitoring data submitted by ET & Contractor's working methods;	1. Confirm receipt of notification of failure in writing; Notify, Contractor	1. Inform the ER & confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Amend working methods if appropriate.
Action level being exceeded by two or more consecutive sampling days	1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor, ER & EPD; 4. Check monitoring data, all plant, equipment & Contractor's working methods; 5. Discuss mitigation measures with IEC, ER & Contractor; 6. Ensure mitigation measures are implemented; 7. Increase monitoring to daily until no exceedance of Action level.	1. Checking monitoring data submitted by ET & Contractor's working method; 2. Discuss with ET & Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor & advise the ER accordingly; 4. Supervise the implementation of mitigation measures.	1. Discuss with IEC on the proposed mitigation measures; 2. Ensure mitigation measures properly implemented; 3. Assess the effectiveness of the implemented mitigation measures.	1. Inform the Engineer & confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant & equipment & consider changes of working methods; 4. Submit proposal of mitigation measures to ER within 3 working days of notification & discuss with ET, IEC & ER; 5. Implement the agreed mitigation measures.

Event	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Limit level being exceeded by one sampling day	1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER & EPD; 4. Check monitoring data, all plant, equipment & contractor's working methods; 5. Discuss mitigation measures with IEC, Contractor & ER.	1. Checking monitoring data submitted by ET & Contractor's working method; 2. Discuss with ET & Contractor on the possible mitigation measures; 3. Review the proposed mitigation measures submitted by Contractor & advise the ER accordingly.	1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET & Contractor on the proposed mitigation measures; 3. Request Contractor to review the working methods.	1. Inform the ER & confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant & equipment & consider changes of working methods; 4. Submit proposal of mitigation measures to ER within 3 working days of notification & discuss with ET, IEC & ER.
Limit level being exceeded by two or more consecutive sampling days	1. Repeat measurement on the next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor, ER & EPD; 4. Check monitoring data, all plant, equipment & Contractor's working methods; 5. Discuss mitigation measures within IEC, Contractor & ER; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.	1. Checking monitoring data submitted by ET & Contractor's working method; 2. Discuss with ET & Contractor on potential remedial actions; 3. Review Contractor's mitigation measures whenever necessary to assure their effectiveness & advise the ER accordingly; 4. Supervise the implementation of mitigation measures.	1. Discuss with IEC, ET & Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented; 5. Consider & instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.	1. Take immediate action to avoid further exceedance; 2. Submit proposal of mitigation measures to ER within 3 working days of notification & discuss with ET, IEC & ER; 3. Implement the agreed mitigation measures; 4. Resubmit proposals of mitigation measures if problem still not under control; 5. As directed by the Engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level.

Appendix D
Implementation Schedule of Environmental Mitigation Measures (EMIS)

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
Air Quality				
Air Quality during Construction	• 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 50m^3 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./ Obs. ✓ ✓ ✓ ✓ ✓ Obs.
Air Quality during Operation	Not required	N/A	N/A	N/A
Noise				
Noise during Construction	• 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> • Wastewater generated from any concrete batching washdown of equipment or similar activities should be discharged into foul sewers, after the removal of settable 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.	During Construction	Contractor	Rem.
	• Sand traps, oil interceptors and other pollution prevention installations should be provided, properly cleaned and maintained.			✓

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

	● Runoff from exposed working areas, unfinished slopes and from unlined temporary channels should be directed to stilling basins and/or silt traps before discharging to the drainage outfalls. ● Regular inspections of stilling basins and/or silt traps is required to ensure that sediment is not conveyed into the existing drainage system. ● Open stockpiles should be covered with a tarpaulin cover. ● During the wet season, any exposed top soils should be covered with a tarpaulin, shotcreted or hydroseeded. ● Sand and silt from wash-water from vehicle washing should be settled out before discharging into storm drains. ● Fuels should be stored in bunded areas such that spillage can be easily collected.			✓ ✓ ✓ ✓ ✓ ✓
Water Quality during Operation	Not required	N/A	N/A	N/A
Waste Management				
Waste Management during Construction	<u>General Waste</u> ● Transport of wastes off site as soon as possible. ● Maintenance of accurate waste records. ● Minimisation of waste generation for disposal (via reduction/recycling/re-use). ● No on-site burning will be permitted. ● Use of re-useable metal hoardings/signboards. <u>Vegetation from site clearance</u> ● Segregation of materials to facilitate disposal. ● Mulching to reduce bulk and where possible review opportunities for the possible beneficial use within landscaping areas.	During Construction During Construction	Contractor Contractor	 Rem. ✓ Obs. ✓ ✓ ✓ ✓
	<u>Demolition Wastes</u> ● Segregation of materials to facilitate disposal. ● Appropriate stockpile management.	During Construction	Contractor	 ✓ ✓

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

	Excavated Materials	During Construction	Contractor	
	● Segregation of materials to facilitate disposal / reuse.			✓
	● Appropriate stockpile management.			✓
	● Re-use of excavated material on or off site (where possible).			N/A
	● Special handling and disposal procedures in the event that contaminated materials are excavated.			
	Construction Wastes	During Construction	Contractor	
	● Segregation of materials to facilitate recycling/reuse (within designated area in appropriate containers/stockpiles).			✓
	● Appropriate stockpile management.			✓
	● Planning to reduce over ordering and waste generation.			✓
	● Recycling and re-use of materials where possible (e.g. metal, wood from formwork)			✓
	● For material which cannot be re-used/recycled, collection should be carried out by an approved waste contractor for landfill disposal.			✓
	Bentonite Slurries	During Construction	Contractor	
	● Bentonite slurries should be reused as far as possible.			N/A
	● Disposal in accordance with Practice Note For Professional Persons ProPECC PN 1/94.			N/A
	Chemical Wastes	During Construction	Contractor	
	● Storage within locked, covered and bunded area.			Obs.
	● The storage area shall not be located adjacent to sensitive receivers e.g. drains.			✓
	● Minimise waste production and recycle oils/solvents where possible.			✓
	● A spill response procedure shall be in place and absorption material available for minor spillages.			✓
	● Use appropriate and labelled containers.			✓
	● Educate site workers on site cleanliness/waste management procedures.			✓

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

	● If chemical wastes are to be generated, the contractor must register with EPD as a chemical waste producer. ● The chemical wastes shall be collected by a licensed chemical waste collector. <u>Municipal Wastes</u> ● Waste shall be stored within a temporary refuse collection facility, in appropriate containers prior to collection and disposal. ● Regular, daily collections are required by an approved waste collector.	During Construction	Contractor	✓ ✓ ✓ ✓
Waste Management during Operation	Not required.	N/A	N/A	N/A
Ecology				
Ecology during Construction	<u>Accurate Delineation of Works Area</u> ● Boundaries of proposed works areas shall be clearly identified and separated from external areas by a physical barrier to prevent encroachment of adjacent habitats. ● Individual trees which fall within the works areas but which work plans show do not require removal are to be retained and fenced off to maximise protection. <u>Dust generation</u> There are a number of measures which shall be taken as specified in the Air Pollution Control (Construction Dust) Regulation on 'Dust Control Requirements, including the following key measures to be applied during construction: ● vehicle washing facilities to be provided at every discernible or designated vehicle exit point;	During Construction During Construction	Contractor Contractor	✓ ✓ ✓
	● all temporary site access roads shall be sprayed with water to suppress dust as necessary; ● all dusty materials should be sprayed with water immediately prior to any handling; and ● all debris should be covered entirely by impervious sheeting or stored in a sheltered debris collection area.			✓ ✓ ✓

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

	<u>Surface Run-off</u> In general, mitigation measures shall be in accordance with ProPECC PN1/94 on 'Construction Site Drainage'. Key measures include: ● 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	 ✓ ✓ ✓ ✓
Ecology during Operation	● 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) (Note: * The division of vegetation planting and maintenance responsibilities shall follow the guidelines stipulated in ETWB TCW No. 2/2004.)	N/A
Landscape and Visual				
Landscape and Visual during Construction	<u>Preservation of Existing Vegetation</u> ● 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	 ✓ ✓
	<u>Temporary Works Areas</u> ● 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.	During Construction	Contractor	 ✓

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

	<u>Hoarding</u> ● A hoarding would be erected where practicable in the most visually sensitive locations to screen the temporary construction works from the local VSRs. <u>Top Soils</u> ● 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. <u>Protection of Important Landscape Features</u> ● 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 During Construction During Construction	Contractor Contractor Contractor	 ✓ N/A N/A
Landscape and Visual during Operation	Not required.	N/A	N/A	N/A

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

Appendix E
Summary of Meteorological Condition Extracted from Hong Kong Observatory

Year 2018

Locally, mainly attributing to the exceptionally warm spring, the weather in Hong Kong was warmer than usual in 2018 with an annual mean temperature of 23.9 degrees, 0.6 degree above the 1981-2010 normal (or 0.9 degree above the 1961-1990 normal) and among the third warmest on record. In particular, the monthly mean temperature of 28.3 degrees for May ranked the highest since records began in 1884. The highest temperature recorded at the Hong Kong Observatory in the year was 35.4 degrees on 30 May, the eleventh highest since records began in 1884. There were 26 Hot Nights and 36 Very Hot Days in Hong Kong in 2018, ranking the eighth highest and the third highest on record respectively.For low temperatures, the number of Cold Days in the year was 21 days, which is 3.9 days more than the 1981-2010 normal. The lowest temperature recorded at the Hong Kong Observatory in the year was 6.8 degrees on 1 February.

Year 2019

In Hong Kong, with eleven out of the twelve months warmer than usual, 2019 was the warmest year since records began in 1884 with an annual mean temperature of 24.5 degrees, 1.2 degrees above the 1981-2010 normal (or 1.5 degrees above the 1961-1990 normal). The annual mean maximum temperature of 27.1 degrees and annual mean minimum temperature of 22.6 degrees were also the highest on record. In particular, the mean temperatures for winter (December 2018 to February 2019) and autumn (September to November 2019) respectively reached 19.1 degrees and 26.1 degrees, both ranking the highest on record. The highest temperature recorded at the Hong Kong Observatory in the year was 35.1 degrees on 9 August, the fourteenth highest on record. There were 46 Hot Nights and 33 Very Hot Days in Hong Kong in 2019, ranking the highest and one of the fourth highest on record respectively. The lowest temperature recorded at the Hong Kong Observatory in the year was 11.4 degrees on 1 January, the highest annual absolute minimum temperature on record. There was only one Cold Day[4] in the year, which is 16.1 days less than the 1981-2010 normal and the fewest annual number of Cold Days since 1884.

Appendix F
Environmental Monitoring Data for Air, Noise Quality

Appendix F
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 ($\mu g/m^3$)	Action Level (µg/m3)	Limit Level (µg/m3)	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						
1-Nov-18	Fine	C192	2.6600	2.8491	0.1891	9117.67	9141.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	90.9	170.3	260.0	<5	N
7-Nov-18	Sunny	C194	2.6632	2.8278	0.1646	9144.67	9168.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	79.2	170.3	260.0	<5	N
13-Nov-18	Fine	C196	2.6541	2.7926	0.1385	9171.67	9195.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	66.6	170.3	260.0	<5	N
19-Nov-18	Sunny	C198	2.6760	2.7984	0.1224	9198.67	9222.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	58.9	170.3	260.0	<5	N
23-Nov-18	Fine	C200	2.6627	2.8413	0.1786	9225.67	9249.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	85.9	170.3	260.0	<5	N
29-Nov-18	Sunny	C202	2.6711	2.8322	0.1611	9252.67	9276.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	85.9	170.3	260.0	<5	N
5-Dec-18	Cloudy	C204	2.6714	2.8256	0.1542	9279.67	9303.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	74.1	170.3	260.0	<5	N
11-Dec-18	Fine	C206	2.6795	2.8419	0.1624	9306.67	9330.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	78.1	170.3	260.0	<5	N
17-Dec-18	Sunny	C208	2.6394	2.8404	0.2010	9333.67	9357.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	96.7	170.3	260.0	<5	N
21-Dec-18	Fine	C210	2.6220	2.8329	0.2109	9360.67	9384.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	101.4	170.3	260.0	<5	N
27-Dec-18	Fine	C212	2.6751	2.7724	0.0973	9387.67	9411.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	46.8	170.3	260.0	<5	N
2-Jan-19	Cloudy	C214	2.6835	2.7933	0.1098	9414.67	9438.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	52.8	170.3	260.0	<5	N
8-Jan-19	Cloudy	C216	2.6663	2.8627	0.1964	9441.67	9465.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	94.4	170.3	260.0	<5	N
14-Jan-19	Cloudy	C218	2.6676	2.7652	0.0976	9468.67	9492.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	46.9	170.3	260.0	<5	N
18-Jan-19	Cloudy	C220	2.6710	2.8389	0.1679	9495.67	9519.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	80.7	170.3	260.0	<5	N
24-Jan-19	Sunny	C222	2.6666	2.8218	0.1552	9522.67	9546.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	74.6	170.3	260.0	<5	N
30-Jan-19	Fine	C224	2.6755	2.8012	0.1257	9549.67	9573.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	60.4	170.3	260.0	<5	N
4-Feb-19	Fine	C226	2.6682	2.7872	0.1190	9576.67	9600.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	57.2	170.3	260.0	<5	N
8-Feb-19	Fine	C228	2.6745	2.7655	0.0910	9603.67	9627.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	43.8	170.3	260.0	<5	N
14-Feb-19	Sunny	C230	2.6557	2.7527	0.0970	9630.67	9654.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	46.6	170.3	260.0	<5	N
20-Feb-19	Cloudy	C232	2.6628	2.7546	0.0918	9657.67	9681.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	44.1	170.3	260.0	<5	N
26-Feb-19	Cloudy	C234	2.6655	2.7809	0.1154	9684.67	9708.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	55.5	170.3	260.0	<5	N
4-Mar-19	Cloudy	C236	2.6007	2.7448	0.1441	9711.67	9735.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	69.3	170.3	260.0	<5	N
8-Mar-19	Rainy	C238	2.6697	2.7094	0.0397	9738.67	9762.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	19.1	170.3	260.0	<5	N
14-Mar-19	Cloudy	C240	2.6598	2.7309	0.0711	9765.67	9789.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	34.2	170.3	260.0	<5	N
20-Mar-19	Cloudy	C242	2.6488	2.7924	0.1436	9792.67	9816.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	69.1	170.3	260.0	<5	N
26-Mar-19	Cloudy	C244	2.6508	2.7809	0.1301	9819.67	9843.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	62.6	170.3	260.0	<5	N
1-Apr-19	Fine	C246	2.6593	2.7683	0.1090	9846.67	9870.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	52.4	170.3	260.0	<5	N
4-Apr-19	Fine	C248	2.6746	2.7674	0.0928	9873.67	9897.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	44.6	170.3	260.0	<5	N
9-Apr-19	Fine	C250	2.6618	2.7855	0.1237	9900.67	9924.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	59.5	170.3	260.0	<5	N
15-Apr-19	Fine	C252	2.6622	2.7904	0.1282	9927.67	9951.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	61.6	170.3	260.0	<5	N
18-Apr-19	Cloudy	C254	2.6641	2.7917	0.1276	9954.67	9978.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	61.4	170.3	260.0	<5	N
24-Apr-19	Fine	C256	2.6636	2.7521	0.0885	9981.67	10005.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	42.6	170.3	260.0	<5	N
30-Apr-19	Cloudy	C258	2.6675	2.7607	0.0932	8.67	32.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	44.8	170.3	260.0	<5	N
6-May-19	Cloudy	C260	2.6749	2.7162	0.0413	35.67	59.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	19.9	170.3	260.0	<5	N
10-May-19	Sunny	C262	2.6512	2.7551	0.1039	62.67	86.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	50.0	170.3	260.0	<5	N
16-May-19	No data was provided, due to the eletricity supply was suspended.																			
22-May-19	Sunny	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	67.2	170.3	260.0	<5	N
28-May-19	Sunny	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	71.2	170.3	260.0	<5	N
3-Jun-19	Cloudy	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	66.7	170.3	260.0	<5	N
6-Jun-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	44.4	170.3	260.0	<5	N
12-Jun-19	Cloudy	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	104.8	170.3	260.0	<5	N
18-Jun-19	Cloudy	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	46.3	170.3	260.0	<5	N
24-Jun-19	Cloudy	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	49.8	170.3	260.0	<5	N
28-Jun-19	Cloudy	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	64.0	170.3	260.0	<5	N
4-Jul-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	70.2	170.3	260.0	<5	N
10-Jul-19	Cloudy	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	67.2	170.3	260.0	<5	N

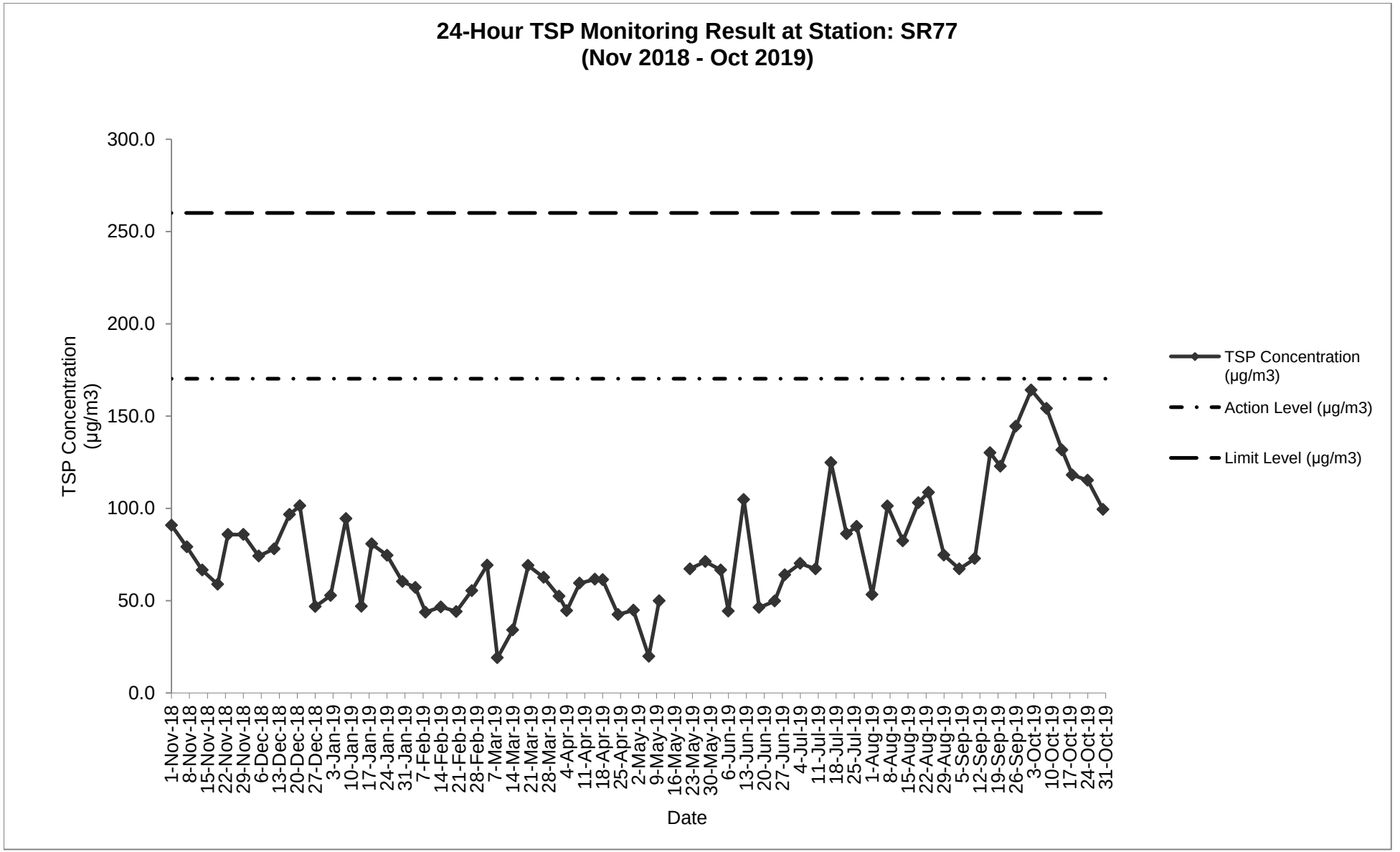
Appendix F
Air Quality Monitoring Results and their Graphical Presentation

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 ($\mu g/m^3$)	Action Level (µg/m3)	Limit Level (µg/m3)	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						
16-Jul-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	124.8	170.3	260.0	<5	N
22-Jul-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	86.3	170.3	260.0	<5	N
26-Jul-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	90.3	170.3	260.0	<5	N
1-Aug-19	Cloudy	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	53.3	170.3	260.0	<5	N
7-Aug-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	101.3	170.3	260.0	<5	N
13-Aug-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	82.5	170.3	260.0	<5	N
19-Aug-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	103.1	170.3	260.0	<5	N
23-Aug-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	108.7	170.3	260.0	<5	N
29-Aug-19	Cloudy	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	74.7	170.3	260.0	<5	N
4-Sep-19	Cloudy	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	67.2	170.3	260.0	<5	N
10-Sep-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	72.8	170.3	260.0	<5	N
16-Sep-19	Cloudy	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	130.1	170.3	260.0	<5	N
20-Sep-19	Sunny	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	122.8	170.3	260.0	<5	N
26-Sep-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	144.5	170.3	260.0	<5	N
2-Oct-19	Fine	-	-	-	-	-	`	24.00	-	-	-	-	-	-	-	164.2	170.3	260.0	<5	N
8-Oct-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	154.1	170.3	260.0	<5	N
14-Oct-19	Cloudy	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	131.6	170.3	260.0	<5	N
18-Oct-19	Cloudy	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	118.1	170.3	260.0	<5	N
24-Oct-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	115.2	170.3	260.0	<5	N
30-Oct-19	Fine	-	-	-	-	-	-	24.00	-	-	-	-	-	-	-	99.4	170.3	260.0	<5	N

Summary For the Reporting Period (Nov 2018 - Oct 2019)	
Average	75.9
Minimum	19.1
Maximum	164.2

Note: No major dust source observed during the monitoring period
Data in **Bold** denotes exceedanece of respective Action Level
Data in **Bold Underline** denotes exceedance of respective Limit Level


24-Hour TSP Monitoring Result at Station: SR77
(Nov 2018 - Oct 2019)
TSP Concentration (µg/m3)
300.0
250.0
200.0
150.0
100.0
50.0
0.0
1-Nov-18
8-Nov-18
15-Nov-18
22-Nov-18
29-Nov-18
6-Dec-18
13-Dec-18
20-Dec-18
27-Dec-18
3-Jan-19
10-Jan-19
17-Jan-19
24-Jan-19
31-Jan-19
7-Feb-19
14-Feb-19
21-Feb-19
28-Feb-19
7-Mar-19
14-Mar-19
21-Mar-19
28-Mar-19
4-Apr-19
11-Apr-19
18-Apr-19
25-Apr-19
2-May-19
9-May-19
16-May-19
23-May-19
30-May-19
6-Jun-19
13-Jun-19
20-Jun-19
27-Jun-19
4-Jul-19
11-Jul-19
18-Jul-19
25-Jul-19
1-Aug-19
8-Aug-19
15-Aug-19
22-Aug-19
29-Aug-19
5-Sep-19
12-Sep-19
19-Sep-19
26-Sep-19
3-Oct-19
10-Oct-19
17-Oct-19
24-Oct-19
31-Oct-19
Date
TSP Concentration (µg/m3)
Action Level (µg/m3)
Limit Level (µg/m3)

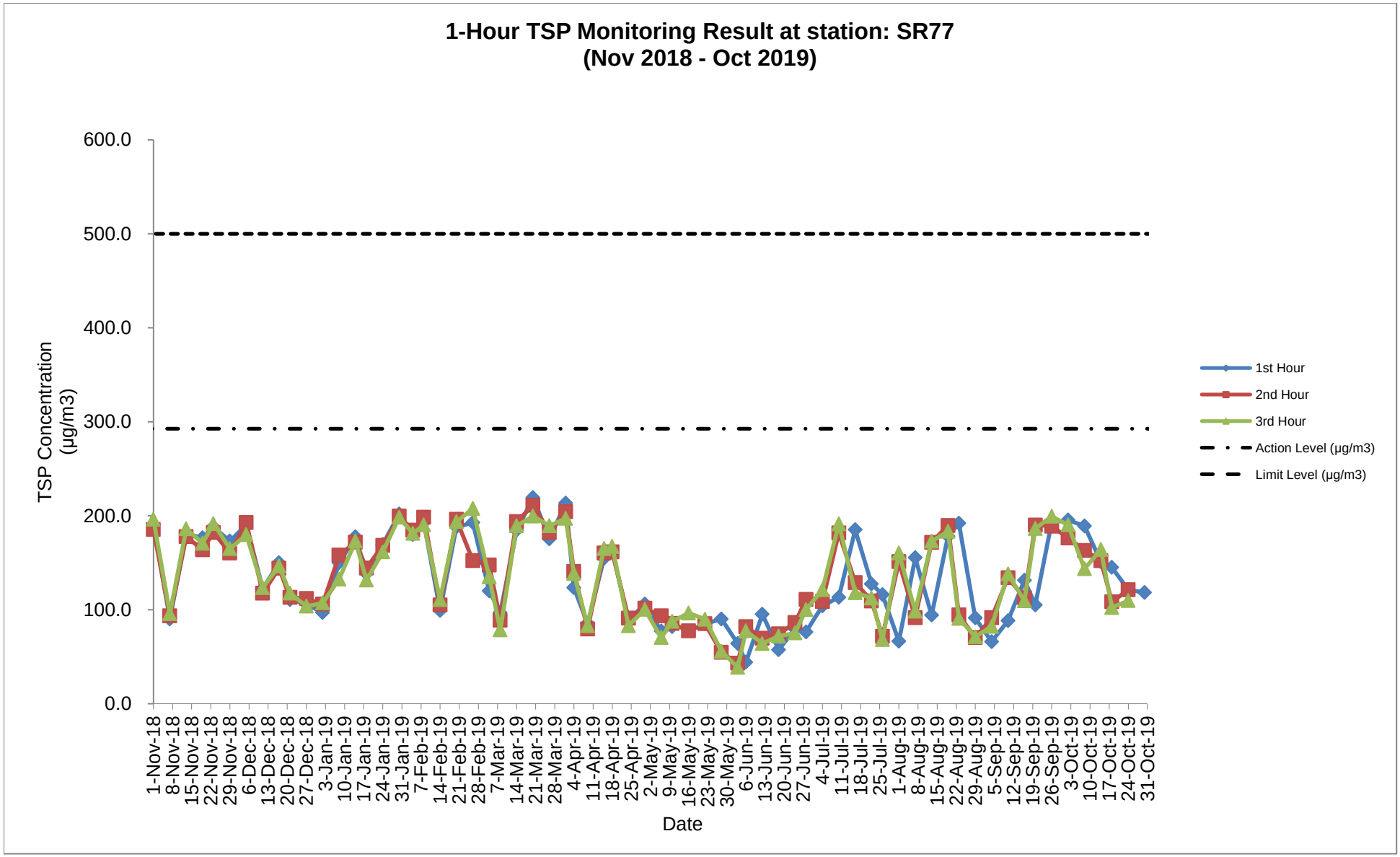
Appendix F
Air Quality Monitoring Results and their Graphical Presentation

1-Hour TSP Monitoring Result at Station: SR77

Date	Weather Condition	Time			Conc.(µg/m^3)			Action Level (µg/m3)	Limit Level (µg/m3)
					1st Hour	2nd Hour	3rd Hour		
1-Nov-18	Fine	9:00	-	12:08	190.4	185.5	196.2	292.7	500.0
7-Nov-18	Sunny	9:00	-	12:10	90.0	93.5	95.8	292.7	500.0
13-Nov-18	Fine	9:00	-	12:08	181.2	177.7	186.2	292.7	500.0
19-Nov-18	Sunny	9:00	-	12:11	176.6	163.9	170.8	292.7	500.0
23-Nov-18	Fine	9:00	-	12:09	188.1	182.3	191.6	292.7	500.0
29-Nov-18	Sunny	9:00	-	12:10	173.1	160.4	165.0	292.7	500.0
5-Dec-18	Fine	9:00	-	12:08	190.4	192.7	180.0	292.7	500.0
11-Dec-18	Sunny	9:00	-	12:07	122.3	117.7	123.5	292.7	500.0
17-Dec-18	Fine	9:00	-	12:08	150.0	144.3	146.6	292.7	500.0
21-Dec-18	Sunny	9:00	-	12:07	110.8	113.1	117.7	292.7	500.0
27-Dec-18	Fine	9:00	-	12:08	106.2	111.9	103.9	292.7	500.0
2-Jan-19	Cloudy	9:00	-	12:08	96.9	106.2	107.3	292.7	500.0
8-Jan-19	Cloudy	9:00	-	12:09	150.0	158.1	132.7	292.7	500.0
14-Jan-19	Cloudy	9:00	-	12:08	177.7	172.0	173.1	292.7	500.0
18-Jan-19	Cloudy	9:00	-	12:09	138.5	144.3	131.6	292.7	500.0
24-Jan-19	Sunny	9:00	-	12:09	169.6	168.5	161.6	292.7	500.0
30-Jan-19	Fine	9:00	-	12:08	202.0	199.7	198.5	292.7	500.0
4-Feb-19	Fine	9:00	-	12:08	180.0	184.7	181.2	292.7	500.0
8-Feb-19	Fine	9:00	-	12:09	192.7	198.5	190.4	292.7	500.0
14-Feb-19	Sunny	9:00	-	12:04	99.3	105.2	110.8	292.7	500.0
20-Feb-19	Cloudy	9:00	-	12:07	188.1	196.2	193.7	292.7	500.0
26-Feb-19	Cloudy	9:00	-	12:04	192.7	152.3	207.7	292.7	500.0
4-Mar-19	Cloudy	9:00	-	12:08	120.0	147.7	135.0	292.7	500.0
8-Mar-19	Rainy	9:00	-	12:08	97.0	88.9	78.5	292.7	500.0
14-Mar-19	Cloudy	9:00	-	12:08	184.7	193.9	189.3	292.7	500.0
20-Mar-19	Cloudy	9:00	-	12:08	219.3	211.2	199.7	292.7	500.0
26-Mar-19	Cloudy	9:00	-	12:08	175.4	182.3	189.3	292.7	500.0
1-Apr-19	Fine	9:00	-	12:08	213.5	204.3	197.3	292.7	500.0
4-Apr-19	Fine	9:00	-	12:09	123.5	140.8	138.5	292.7	500.0
9-Apr-19	Fine	9:00	-	12:08	85.4	79.6	83.1	292.7	500.0
15-Apr-19	Fine	9:00	-	12:07	154.6	160.4	165.0	292.7	500.0
18-Apr-19	Cloudy	9:00	-	12:09	162.7	161.6	167.3	292.7	500.0
24-Apr-19	Fine	9:00	-	12:08	88.9	91.2	83.1	292.7	500.0
30-Apr-19	Cloudy	9:00	-	12:09	106.2	101.6	100.4	292.7	500.0
6-May-19	Sunny	9:00	-	12:08	77.3	93.5	70.4	292.7	500.0
10-May-19	Sunny	9:00	-	12:08	81.9	85.4	87.7	292.7	500.0
16-May-19	No data was provided, due to the eletricity supply was suspended.								
22-May-19	Sunny	11:00	-	14:00	85.1	77.7	96.6	292.7	500.0
28-May-19	Sunny	11:00	-	14:00	90.1	85.2	89.9	292.7	500.0
3-Jun-19	Cloudy	9:45	-	12:45	64.2	54.7	55.8	292.7	500.0
6-Jun-19	Fine	9:00	-	12:00	44.3	43.2	38.7	292.7	500.0
12-Jun-19	Cloudy	9:00	-	12:00	95.2	81.9	77.5	292.7	500.0
18-Jun-19	Cloudy	9:00	-	12:00	57.5	69.7	64.2	292.7	500.0
24-Jun-19	Cloudy	9:00	-	12:00	79.8	74.3	72.1	292.7	500.0
28-Jun-19	Cloudy	9:00	-	12:00	76.4	86.3	75.3	292.7	500.0
4-Jul-19	Fine	9:45	-	11:45	104.1	111.1	100.3	292.7	500.0
10-Jul-19	Cloudy	9:00	-	11:00	113.2	108.8	121.2	292.7	500.0
16-Jul-19	Fine	9:00	-	11:00	185.1	181.8	191.4	292.7	500.0
22-Jul-19	Fine	9:00	-	11:00	127.5	129.0	118.2	292.7	500.0
26-Jul-19	Fine	9:00	-	11:00	116.2	109.3	112.6	292.7	500.0
1-Aug-19	Cloudy	9:30	-	12:30	66.4	71.7	68.2	292.7	500.0
7-Aug-19	Fine	9:30	-	12:30	155.4	151.3	160.4	292.7	500.0
13-Aug-19	Fine	9:30	-	12:30	94.2	91.7	98.6	292.7	500.0
19-Aug-19	Fine	8:30	-	11:30	178.4	171.7	172.8	292.7	500.0
23-Aug-19	Fine	9:30	-	12:30	192.2	189.7	183.5	292.7	500.0
29-Aug-19	Cloudy	9:30	-	12:30	91.3	94.5	90.9	292.7	500.0
4-Sep-19	Cloudy	9:00	-	12:00	66.1	70.3	71.3	292.7	500.0
10-Sep-19	Fine	9:30	-	12:30	88.4	91.5	82.3	292.7	500.0
16-Sep-19	Cloudy	9:00	-	12:00	131.5	134.2	138.1	292.7	500.0
20-Sep-19	Sunny	9:00	-	12:00	105.2	112.6	109.4	292.7	500.0
26-Sep-19	Fine	9:00	-	12:00	193.1	190.2	186.4	292.7	500.0
2-Oct-19	Fine	9:00	-	12:00	195.4	189.0	199.4	292.7	500.0
8-Oct-19	Fine	9:30	-	12:30	189.2	176.4	190.2	292.7	500.0
14-Oct-19	Cloudy	9:30	-	12:30	151.2	163.1	143.7	292.7	500.0
18-Oct-19	Cloudy	9:00	-	12:00	145.1	152.3	164.2	292.7	500.0
24-Oct-19	Fine	9:30	-	12:00	121.3	108.4	102.5	292.7	500.0
30-Oct-19	Fine	9:30	-	12:30	118.5	121.4	109.7	292.7	500.0

Summary For the Reporting Period (Nov 2018 - Oct 2019)	
Average	134.2
Minimum	38.7
Maximum	219.3

Note: No major dust source observed during the monitoring period


1-Hour TSP Monitoring Result at station: SR77
(Nov 2018 - Oct 2019)
TSP Concentration (µg/m3)
600.0
500.0
400.0
300.0
200.0
100.0
0.0
1st Hour
2nd Hour
3rd Hour
Action Level (µg/m3)
Limit Level (µg/m3)
1-Nov-18
8-Nov-18
15-Nov-18
22-Nov-18
29-Nov-18
6-Dec-18
13-Dec-18
20-Dec-18
27-Dec-18
3-Jan-19
10-Jan-19
17-Jan-19
24-Jan-19
31-Jan-19
7-Feb-19
14-Feb-19
21-Feb-19
28-Feb-19
7-Mar-19
14-Mar-19
21-Mar-19
28-Mar-19
4-Apr-19
11-Apr-19
18-Apr-19
25-Apr-19
2-May-19
9-May-19
16-May-19
23-May-19
30-May-19
6-Jun-19
13-Jun-19
20-Jun-19
27-Jun-19
4-Jul-19
11-Jul-19
18-Jul-19
25-Jul-19
1-Aug-19
8-Aug-19
15-Aug-19
22-Aug-19
29-Aug-19
5-Sep-19
12-Sep-19
19-Sep-19
26-Sep-19
3-Oct-19
10-Oct-19
17-Oct-19
24-Oct-19
31-Oct-19
Date

Appendix F
Noise Monitoring Results and their Graphical Presentation

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)				
2018-11-01	Fine	11:30	12:00	79.0	66.0	71.0	-	67.8	75.0	N
2018-11-07	Sunny	11:30	12:00	69.5	51.5	65.5	-	67.8	75.0	N
2018-11-13	Fine	11:30	12:00	70.0	54.0	65.0	-	67.8	75.0	N
2018-11-19	Sunny	11:15	11:45	74.0	59.0	66.5	-	67.8	75.0	N
2018-11-29	Sunny	11:30	12:00	71.0	56.0	64.5	-	67.8	75.0	N
2018-12-05	Cloudy	11:30	12:00	79.0	66.0	69.0	-	67.8	75.0	N
2018-12-11	Fine	11:30	12:00	78.5	63.5	68.5	-	67.8	75.0	N
2018-12-17	Sunny	11:00	11:30	77.5	62.0	66.5	-	67.8	75.0	N
2018-12-27	Fine	11:30	12:00	76.5	63.0	67.5	-	67.8	75.0	N
2019-01-02	Cloudy	11:15	11:45	88.5	65.5	70.1	-	67.8	75.0	N
2019-01-08	Cloudy	11:15	11:45	92.0	63.5	64.5	-	67.8	75.0	N
2019-01-14	Cloudy	11:15	11:45	93.0	62.5	65.5	-	67.8	75.0	N
2019-01-24	Sunny	11:30	12:00	88.5	64.5	66.0	-	67.8	75.0	N
2019-01-30	Fine	11:05	11:35	96.0	63.0	69.0	-	67.8	75.0	N
2019-02-04	Fine	11:15	11:45	93.5	62.5	68.0	-	67.8	75.0	N
2019-02-14	Sunny	11:15	11:45	90.5	61.0	65.5	-	67.8	75.0	N
2019-02-20	Cloudy	11:15	11:45	86.5	61.5	66.5	-	67.8	75.0	N
2019-02-26	Cloudy	11:30	12:00	92.5	61.5	63.5	-	67.8	75.0	N
2019-03-04	Cloudy	11:15	11:45	105.0	61.0	67.0	-	67.8	75.0	N
2019-03-14	Cloudy	11:30	12:00	94.0	62.5	67.0	-	67.8	75.0	N
2019-03-20	Cloudy	11:15	12:00	91.0	64.5	65.5	-	67.8	75.0	N
2019-03-26	Cloudy	11:30	12:00	98.5	61.5	67.5	-	67.8	75.0	N
2019-04-01	Fine	11:15	11:45	91.0	60.5	66.5	-	67.8	75.0	N
2019-04-09	Fine	11:15	11:45	104.0	61.5	68.0	-	67.8	75.0	N
2019-04-15	Fine	11:15	11:45	92.5	62.5	64.0	-	67.8	75.0	N
2019-04-24	Fine	11:15	11:45	89.0	61.5	67.0	-	67.8	75.0	N
2019-04-30	Cloudy	11:30	12:00	92.0	63.5	65.5	-	67.8	75.0	N
2019-05-06	Cloudy	11:15	11:45	92.0	63.5	65.0	-	67.8	75.0	N
2019-05-16	Sunny	11:15	11:45	93.5	66.0	67.5	-	67.8	75.0	N
2019-05-22	Fine	11:30	12:00	93.5	60.5	69.0	-	67.8	75.0	N
2019-05-28	Sunny	11:30	12:00	85.5	56.0	65.5	-	67.8	75.0	N
2019-06-03	Cloudy	11:15	11:45	97.0	58.0	63.5	-	67.8	75.0	N
2019-06-12	Cloudy	11:15	11:45	99.0	56.5	69.0	-	67.8	75.0	N
2019-06-18	Cloudy	11:15	11:45	91.5	56.0	65.0	-	67.8	75.0	N
2019-06-24	Cloudy	11:15	11:45	98.5	56.5	66.5	-	67.8	75.0	N
2019-07-04	Fine	11:15	11:45	97.5	58.5	64.5	-	67.8	75.0	N
2019-07-10	Cloudy	11:15	11:45	100.0	60.0	63.5	-	67.8	75.0	N
2019-07-16	Fine	11:15	11:45	94.5	61.0	66.5	-	67.8	75.0	N
2019-07-22	Fine	11:15	11:45	103.5	56.0	65.0	-	67.8	75.0	N
2019-07-26	Fine	11:15	11:45	106.5	57.0	68.0	-	67.8	75.0	N
2019-08-01	Cloudy	12:15	12:45	94.5	60.5	65.5	-	67.8	75.0	N
2019-08-07	Fine	12:15	12:45	85.5	55.5	64.5	-	67.8	75.0	N
2019-08-13	Fine	12:15	12:45	90.5	57.5	63.5	-	67.8	75.0	N
2019-08-19	Fine	12:15	12:45	98.5	56.5	65.0	-	67.8	75.0	N
2019-08-29	Cloudy	12:15	12:45	105.0	56.5	63.5	-	67.8	75.0	N
2019-09-04	Cloudy	11:15	11:45	96.0	58.0	65.0	-	67.8	75.0	N
2019-09-10	Fine	11:15	11:45	100.5	55.5	64.0	-	67.8	75.0	N
2019-09-16	Cloudy	11:15	11:45	90.5	56.0	63.5	-	67.8	75.0	N
2019-09-26	Fine	11:15	11:45	102.0	58.5	63.5	-	67.8	75.0	N
2019-10-02	Fine	11:15	11:45	96.0	60.0	64.5	-	67.8	75.0	N
2019-10-08	Fine	11:15	11:45	95.0	56.0	65.0	-	67.8	75.0	N
2019-10-14	Cloudy	11:15	11:45	101.0	58.0	63.5	-	67.8	75.0	N
2019-10-24	Fine	11:15	11:45	104.0	57.5	63.0	-	67.8	75.0	N
2019-10-30	Fine	11:15	11:45	97.5	55.5	65.0	-	67.8	75.0	N

Summary For the Reporting Period (Nov 2018 - Oct 2019)	
Average	65.9
Minimum	63.0
Maximum	71.0

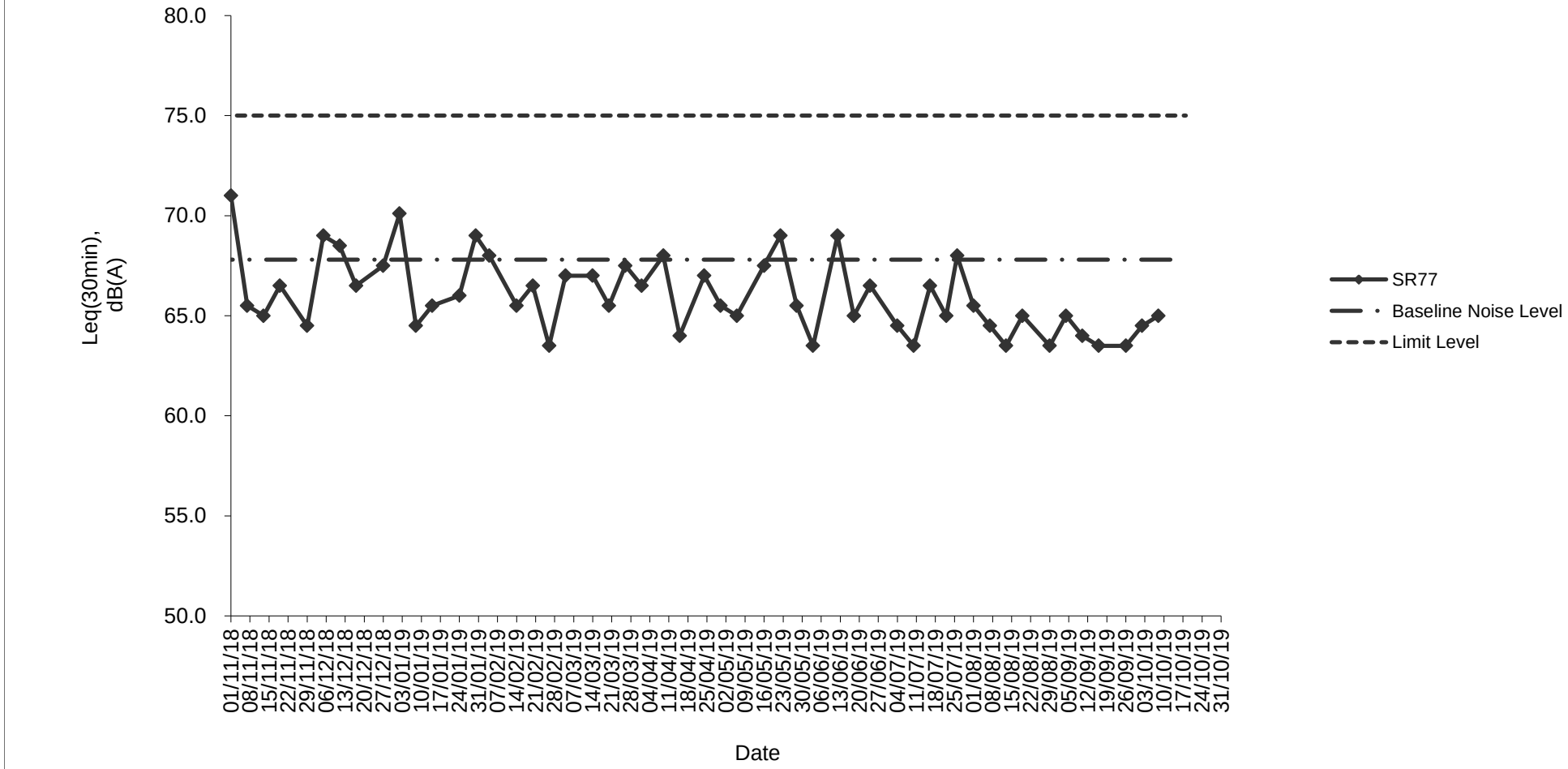
Remarks

* +3dB(A) Façade effect correction included

** Baseline corrected level is only calculated when measured noise level (Leq) > limit level.

*** Data in **<u>Bold Underline</u>** denotes exceedance of respective Limit Level

Noise monitoring result: SR77
(Nov 2018 - Oct 2019)



Appendix G
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	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. 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. The complaint is considered an invalid complaint under this Project.	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)	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. 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. 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.	Completed

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
					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 The complaint is considered unlikely due to the construction works of this project.	
C171228	28 December, 2017	1823	Kau Lung Hang and Hong Lok Yuen	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	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. As advised by the Contractor, no construction works were carried out during the public holiday. No exceedance of TSP level at the air monitoring station under this Contract was recorded in the past six months except 8 December 2017.	

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
				關建築商。附圖是該區狀況。昨日洗車，一日已經沙塵滿佈。)	Exceedance on 8 December 2017 was considered not project related as no major excavation works located close to the monitoring location at SR77. 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.	

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