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

Monthly EM&A Report

October 2016

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

Monthly EM&A Report

(October 2016)

Certified by: Fredrick Leong

Position: Environmental Team Leader

Date: 11 November 2016

MOTT MACDONALD

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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/D Condition 3.3 – Submission of Monthly EM&A Report – October 2016 for the portion of Stage 2 works entrusted to Civil Engineering and Development Department (CEDD) under Contract No. CV/2012/09

10 November 2016
By Fax (2805 5028) & Hand

We refer to the revised Monthly EM&A Report – October 2016 received on 10 November 2016 submitted by the Environmental Team via email. Pursuant to Environmental Permit Condition 3.3, I hereby verify the Monthly EM&A Report – October 2016 (Rev. 0) for the portion of works under Stage 2 of the captioned Project which is entrusted to CEDD under Contract No. CV/2012/09.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED

Steven Tang
Independent Environmental Checker

c.c.

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11 November 2016	0	Ivan TING Vanessa HO	Fredrick LEONG	Helen COCHRANE

Contents

List of Tables

List of Figures

List of Appendices

EXECUTIVE SUMMARY

The Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2 (hereafter called "the Project") covers part of the construction of the widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling which aimed to widen Tolo Highway and Fanling Highway to dual 4-lane carriageway in order to alleviate the current traffic congestion problems and to cope with the increasing transport demands to and from the urban areas and also cross boundary traffic. The Project covers construction activities at Yuen Leng along the existing Fanling Highway.

The impact EM&A for the Project includes air quality, noise and water quality monitoring. The EM&A programme commenced on 5 November 2013.

This report documents the findings of EM&A works conducted in October 2016. As informed by the Contractor, the major activities in the reporting month were:

- Cable Detection and Trial Trenches;
- Demolition of Existing Vehicular Bridge;
- Footbridge Construction;
- Storm Drains Laying;
- Noise Barrier Construction;
- Pier/ Pier Table Construction;
- Pile Cap Works;
- Portal Beam Construction;
- Retaining Wall Construction;
- Road Works;
- Sewer Works;
- Utilities Duct Laying;
- Viaduct Segment Erection; and
- Water Main Laying.

Breach of Action and Limit Levels for Air Quality

No exceedance of Action and Limit Level was recorded for 24-hour TSP monitoring at the monitoring location AM1(SR77) in the reporting month.

No exceedance of Action and Limit Level was recorded for 1-hour TSP monitoring at the monitoring location AM1(SR77) in the reporting month.

Breach of Action and Limit Levels for Noise

No noise complaint was received in the reporting month, so no Action Level exceedance was recorded. Also, no Limit Level exceedance of noise monitoring was recorded in the reporting month.

Breach of Action and Limit Levels for Water Quality

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. Due to the loading requirement of a fresh water main under the box culvert, installation of the base slab at Box Culvert ID4 has been scheduled to be commenced in December 2016.

The construction works are temporarily suspended until the utilities diversion works complete. The 4-week post construction water quality monitoring will be commenced after the installation of the base slab finishes, hence the completion of the box culvert works.

Complaint, Notification of Summons and Successful Prosecution

No complaint, notification of summons and successful prosecution was received in the reporting month.

Future Key Issues

The major construction works in the coming reporting month are anticipated to include:

- Boundary Wall for Pumping Station;
- Cable Detection and Trial Trenches;
- Construction of Remaining Slab of Box Culvert ID05;
- Demolition of Valve Control House;
- Footbridge Construction;
- Gabion wall Construction;
- Re-provisioning of Kiu Tau Footbridge;
- Storm Drains Laying;
- Noise Barrier Construction;
- Pier/ Pier Table Construction;
- Pile Cap Works;
- Portal Beam Construction;
- Retaining Wall Construction;
- Road Works;

- Sewer Works;
- Slope Reinstatement Works Near Bridge E;
- Utilities Duct Layout;
- Viaduct Segment Erection; and
- Water Main Laying.

Potential environmental impacts arising from the above construction activities are anticipated to be mainly associated with construction dust, noise, water quality and waste management.

1 INTRODUCTION

1.1.1 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.

1.2 Purpose of the Report

1.2.1 This is the monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting month of October 2016.

1.3 Report Structure

1.3.1 This monthly EM&A Report comprises the following sections:

- Section 1: Introduction
- Section 2: Project Information
- Section 3: Status of Environmental Licenses, Notifications and Permits
- Section 4: Air Quality Monitoring
- Section 5: Noise Monitoring
- Section 6: Water Monitoring
- Section 7: Waste Management
- Section 8: Environmental Site Inspection and Audit
- Section 9: Implementation Status of Environmental Mitigation Measures
- Section 10: Summary of EP Submission in the Reporting Month
- Section 11: Environmental Non-Conformance
- Section 12: Future Key Issues
- Section 13: Conclusions and Recommendations

2 PROJECT INFORMATION

2.1 Background

2.1.1 Tolo Highway and Fanling Highway are expressways in the North East New Territories connecting Sha Tin, Tai Po and Fanling. These highways form a vital part of the strategic Route 1, which links Hong Kong Island to Shenzhen. At present, this section of Route 1 is a dual 3-lane carriageway. However, at several major interchanges along this section of Route 1, the highway is only dual-2 lane. Severe congestion is a frequent occurrence during peak periods, particularly in the Kowloon bound direction.

2.1.2 The objective of the Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling is to widen Tolo Highway and Fanling Highway to dual 4-lane carriageway in order to alleviate the current traffic congestion problems and to cope with the increasing transport demands to and from the urban areas and also cross boundary traffic.

2.1.3 The construction works for the Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling are to be delivered in 2 stages:

- Stage 1 – Construction works between Island House Interchange and Tai Hang; and
- Stage 2 – Construction works between Tai Hang and Wo Hop Shek Interchange.

2.1.4 The construction works of Stage 1 under the EP commenced in November 2009 and was planned to be completed in December 2013 tentatively. The works of Stage 2 was planned to commence in November 2013 and complete by end of 2016. Hyder-Arup-Black and Veatch Joint Venture (HABVJV) was appointed by the Highways Department (HyD) as the consultants for the design and construction assignment for the Project. Mott MacDonald Hong Kong Ltd is the Independent Environmental Checker (IEC) of both Stage 1 and Stage 2 works.

2.1.5 A portion of Stage 2 works of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling (hereafter called “the Project”) is entrusted to the contractor of Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 3, i.e. Chun Wo. AECOM Asia Co Ltd was appointed by the CEDD as the consultant for the design and construction assignment for the Liantang development.

2.1.6 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 current VEP (EP-324/2008/D) was granted on 27 August 2015.

2.2 Site Description

2.2.1 The major construction activities under the Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2 include:

- At-Grade Road Works – Temporary and permanent road formation, pipe laying, road drainage, footpath and noise barrier construction;
- Demolition of existing Kiu Tau Footbridge and Footbridge Reprovision; and
- Box Culvert Extension – Flow diversion of existing stream, excavation, sub-base and blinding, base, wall and top slab construction.

2.2.2 **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.

2.3 Construction Programme and Activities

2.3.1 The major construction activities undertaken in the reporting month are summarized below:

- Cable Detection and Trial Trenches;
- Demolition of Existing Vehicular Bridge;
- Footbridge Construction;
- Storm Drains Laying;
- Noise Barrier Construction;
- Pier/ Pier Table Construction;
- Pile Cap Works;
- Portal Beam Construction;
- Retaining Wall Construction;
- Road Works;
- Sewer Works;
- Utilities Duct Laying;
- Viaduct Segment Erection; and
- Water Main Laying.

2.3.2 The construction programme is presented in **Appendix A**.

2.4 Project Organisation

2.4.1 The project organization structure is shown in **Appendix B**. The key personnel contact names and numbers for the Project 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. Victor Huang	2638 6181	
Meinhardt	Environmental Team (ET)	ET Leader	Mr. Fredrick Leong	2859 1739	2540 1580

3 STATUS OF ENVIRONMENTAL LICENSES, NOTIFICATION AND PERMITS

3.1.1 The relevant environmental licenses, permits and/or notifications on environmental protection for this Project and valid in the reporting month are summarized in **Table 3.1**.

Table 3.1 Status of Environmental Licenses, Notifications and Permits

Permit / License No. / Notification / Reference No.	Valid Period		Status	Remarks
	From	To		
Environmental Permit				
EP-324/2008/D	27 Aug 2015	--	Granted on 27 Aug 2015	
Construction Noise Permit				
GW-RN0233-16	11 Apr 2016	10 Oct 2016	Valid	For general works on Tai Wo Service Road West
GW-RN0309-16	30 Apr 2016	29 Oct 2016	Valid	For segment erection AB10 to AD11
GW-RN0414-16	18 Jun 2016	17 Dec 2016	Valid	For road diversion and maintenance of Fanling Highway Southbound
GW-RN0434-16	22 Jun 2016	21 Dec 2016	Valid	For general works at the southward of site office
GW-RN0514-16	16 Jul 2016	15 Oct 2016	Valid	For segment erection crossing over MTRC's Rail Track of Pier AB11 and AD12(0115-0500)
GW-RN0525-16	20 Jul 2016	7 Jan 2017	Valid	For loading and unloading along Fanling Highway both bounds
GW-RN0541-16	5 Aug 2016	04 Nov 2016	Valid	For falsework dismantling of Pier AD12
GW-RN0549-16	30 Jul 2016	9 Jan 2017	Valid	For road resurfacing of Fanling Highway Southbound
GW-RN0561-16	16 Aug 2016	11 Feb 2017	Valid	For road diversion and maintenance of Fanling Highway Northbound

Permit / License No. / Notification / Reference No.	Valid Period		Status	Remarks
	From	To		
GW-RN0581-16	25 Aug 2016	24 Feb 2017	Valid	For segment Delivery to Kiu Tau
GW-RN0580-16	25 Aug 2016	24 Feb 2017	Valid	For general works at the northward of site office
GW-RN0596-16	17 Aug 2016	15 Feb 2017	Valid	For fuel delivery entering the construction site next to MTRC's East Rail Line at Tong Hang Tung
GW-RN0619-16	22 Aug 2016	14 Feb 2017	Valid	For tractor with trailer entering the Construction Site next to MTRC's East Rail Line at Tong Hang Tung
GW-RN0606-16	27 Aug 2016	2 Oct 2016	Valid	For demolition of vehicular bridge at Fanling Highway both bounds
GW-RN0646-16	10 Sep 2016	9 Mar 2017	Valid	For segment erection of pier AA4, AB6, AD7 and AA18
GW-RN0649-16	3 Sep 2016	7 Jan 2017	Valid	For traffic road works at a section of Fanling Highway both bounds
GW-RN0653-16	11 Sep 2016	10 Mar 2017	Valid	For segment erection AB7 to AB10
GW-RN0654-16	15 Sep 2016	14 Mar 2017	Valid	For segment erection crossing over MTRC's Rail Track of Pier AB11 and AD12 (1900-2300)
Wastewater Discharge License				
WT00016832-2013	28 Aug 2013	31 Aug 2018	Valid	--
Chemical Waste Producer Registration				
5113-634-C3817-01	7 Oct 2013	--	Valid	--
Billing Account for Construction Waste Disposal				
7017914	2 Aug 2013	--	Account Active	--
Notification Under Air Pollution Control (Construction Dust) Regulation				
--	31 Jul 2013	30 Jul 2019	Notified	--

4 AIR QUALITY MONITORING

4.1 Monitoring Requirement

4.1.1 In accordance with the Updated EM&A Manual, 1-hr and 24-hr total suspended particulate (TSP) levels at the designated air quality monitoring station are required. Impact 24-hour TSP monitoring should be carried out for at least once every 6 days. For the 1-hr TSP impact monitoring, the sampling frequency of at least three times in every 6 days should be undertaken when the highest dust impact occurs.

4.2 Monitoring Equipment

4.2.1 The 1hr- TSP and 24-hr TSP air quality monitoring were performed using a High Volume Sampler (HVS), of which its location and operation satisfy, as far as practicable, all the requirements as specified in the Updated EM&A Manual. The brand and model of the equipment are given in **Table 4.1**.

Table 4.1 Air Quality Monitoring Equipment

Equipment	Brand and Model	Quantity	Serial Number
High Volume Sampler (1-hr TSP and 24-hr TSP)	Tisch Total Suspended Particulate Mass Flow Controlled High Volume Air Sampler (Model No. TE-5170 MFC)	1	2359

4.2.2 The HVS and its accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.

4.2.3 Calibration of the HVS (five point calibration) using Calibration Kit was carried out every two months. The HVS calibration orifice will be calibrated annually. Calibration certificate of the TE-5025A Calibration Kit and the HVS are provided in **Appendix C**.

4.3 Monitoring Location

4.3.1 Air quality monitoring was conducted at the location specified in the Updated EM&A Manual. **Table 4.2** describes the details of the air quality monitoring station with its location as shown in **Figure 2**.

Table 4.2 Location of Air Quality Monitoring

Air Monitoring Station ID	Monitoring Location	Description
AM1(SR77) *	Yuen Leng 2 *	Residential, Ground floor

Remark:
* Location and Station / ASR ID as identified in Updated EM&A Manual / EIA Report for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling

4.4 Monitoring Parameters, Frequency and Duration

4.4.1 **Table 4.3** summarizes the monitoring parameters, frequency and duration of impact TSP monitoring.

Table 4.3 Air Quality Monitoring Parameters, Frequency and Duration

Parameter	Frequency and Duration
1-hour TSP	At least three times in every 6 days should be undertaken when the highest dust impact occur
24-hour TSP	Once every 6 days

4.5 Monitoring Methodology

1-hr and 24-hr TSP Monitoring

4.5.1 With the consideration of criteria stated in the Updated EM&A Manual, the HVS was installed in the vicinity of the air sensitive receivers.

4.5.2 The relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, and any special phenomena observed were recorded. The weather information was referenced from Hong Kong Observatory (http://www.weather.gov.hk/wxinfo/pastwx/extractc.htm).

4.5.3 A HOKLAS accredited laboratory with constant temperature and humidity control, and equipped with necessary measuring and conditioning instruments, to handle the 24-hr TSP samples, was employed for sample analysis.

4.5.4 Filter papers of size 8"x10" were labelled before sampling. They were inspected to be clean with no pin holes and conditioned in a humidity controlled chamber for over 24-hr and were pre-weighed before use for the sampling.

4.5.5 The 24-hr TSP levels were measured by following the standard high volume sampling method for TSP as set out in the Title 40 of the United States Code of Federal Regulations, Chapter 1 (Part 50), Appendix B. TSP was sampled by drawing air through a conditioned, pre-weighted filter paper inside the HVS at a controlled air flow rate. After 24-hr sampling, the filter papers loaded with dust were kept in a clean and tightly sealed plastic bag, and then returned to the laboratory for reconditioning in the humidity controlled chamber followed by accurate weighing by an electronic balance with a readout down to 0.1 mg.

4.5.6 All the collected samples were kept in a good condition for 6 months before disposal.

4.5.7 For 1-hr TSP monitoring, monitoring methodology is the same as 24-hr TSP monitoring which has been presented in **Section 4.5.1** to **Section 4.5.6**, but with sampling period changed to 1 hour.

4.6 Monitoring Schedule for the Reporting month

4.6.1 The schedule for environmental monitoring for the reporting month is provided in **Appendix D**. Meteorological data extracted from Hong Kong Observatory for the reporting month is provided in **Appendix E**.

4.7 Monitoring Results

4.7.1 The monitoring results for 1-hr and 24-hr TSP are summarised in **Table 4.4** and **Table 4.5** respectively. Detailed air quality monitoring results and the graphical presentation

of air quality monitoring data for the current and past three reporting months are presented in **Appendix F**.

Table 4.4 Summary of 1-hr TSP Monitoring Results

ASR ID	Average ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
AM1(SR77) *	136.5	113.1 –157.0	292.7	500

Remark:
* Station / ASR ID as identified in Updated EM&A Manual / EIA Report for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling

Table 4.5 Summary of 24-hr TSP Monitoring Results

ASR ID	Average ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
AM1(SR77) *	59.1	41.8 – 72.3	170.3	260

Remark:
* Station / ASR ID as identified in Updated EM&A Manual / EIA Report for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling

4.7.2 No exceedance of Action and Limit Level was recorded for 24-hour TSP monitoring at the monitoring location AM1(SR77) in the reporting month.

4.7.3 No exceedance of Action and Limit Level was recorded for 1-hour TSP monitoring at the monitoring location AM1(SR77) in the reporting month.

4.7.4 The Event and Action Plan for the occurrence of non-compliance of the air quality criteria is annexed in **Appendix G**.

5 NOISE MONITORING

5.1 Monitoring Requirements

5.1.1 In accordance with the Updated EM&A Manual, the impact noise monitoring frequency shall depend on the scale of the construction activities. An initial guide on the regular monitoring frequency should be at least once per week when noise generating activities are underway.

5.2 Monitoring Equipment

5.2.1 Noise monitoring was performed using a sound level meter at the monitoring station. The sound level meter deployed complies with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications. An acoustic calibrator was deployed to check the sound level meter at a known sound pressure level. The brand and model of the equipment is given in **Table 5.1**.

Table 5.1 Noise Monitoring Equipment

Equipment	Brand and Model	Quantity	Serial Number
Sound Level Calibrator	Rion (Model No. NC-74)	1	34857296
Sound Level Meter	B&K (Model No. 2238)	1	2694908

5.2.2 The sound level calibrator and sound level meter were verified by a certified laboratory every year. Calibration certificates of the sound level meter and acoustic calibrator are provided in **Appendix C**.

5.3 Monitoring Locations

5.3.1 Impact noise monitoring was conducted at the location specified in the Updated EM&A Manual. **Table 5.2** describes the details of the noise monitoring station with its location as shown in **Figure 2**.

Table 5.2 Location of Noise Monitoring

NSR ID	Monitoring Location	Description
M1(SR77) *	Yuen Leng 2 *	Residential, Ground floor

Remark:
* Location and Station / NSR ID as identified in Updated EM&A Manual / EIA Report for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling

5.4 Monitoring Parameters, Frequency and Duration

5.4.1 **Table 5.3** summarizes the monitoring parameters, frequency and duration of impact noise monitoring.

Table 5.3 Noise Monitoring Parameters, Frequency and Duration

Parameter and Duration	Frequency
30-mins measurement at between 0700 and 1900 on normal weekdays. Leq, L10 and L90 would be recorded.	At least once per week

5.5 Monitoring Methodology

5.5.1 The monitoring procedures are summarised as follows:

- The sound level meter was set on a tripod at a height of 1.2 m above the ground for free-field measurements at monitoring station SR77;
- The battery condition was checked to ensure good functioning of the meter;
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
- Frequency weighting: A
- Time weighting: Fast
- Parameters: Leq, L10 and L90
- Time measurement: Leq(30-minutes) during non-restricted hours i.e. 07:00 – 19:00 hrs on normal weekdays
- Prior to and after each noise measurement, the meter was calibrated using the acoustic calibrator for 94dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- At the end of the monitoring period, the Leq, L10 and L90 were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- A façade correction of +3dB (A) shall be made to the noise parameter obtained by free field measurement.

5.6 Monitoring Schedule for the Reporting Month

5.6.1 The schedule for environmental monitoring for the reporting month is provided in **Appendix D**. Meteorological data extracted from Hong Kong Observatory for the reporting month is provided in **Appendix E**.

5.7 Monitoring Results

5.7.1 The monitoring results for noise are summarized in **Table 5.4** and the monitoring results and the graphical presentation of noise level for the current and past three reporting months are presented in **Appendix H**.

Table 5.4 Summary of Noise Monitoring Results

Noise Monitoring Station ID	Average, dB(A), Leq (30min) (2)	Range, dB(A), Leq (30min) (2)	Action Level	Limit Level, dB(A)
M1(SR77) (1)	67.6	67.0 – 68.5	When one documented valid complaint is received	75

Remark:
(1) Station / NSR ID as identified in Updated EM&A Manual / EIA Report for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling
(2) +3dB(A) façade correction included

5.7.2 Major noise sources during the noise monitoring included construction activities of the Project and that along Tai Wo Service Road East, and nearby traffic noise.

5.7.3 No noise complaint was received in the reporting month, so no Action Level exceedance was recorded. Also, no Limit Level exceedance of noise monitoring was recorded in the reporting month.

5.7.4 The Event and Action Plan for the occurrence of non-compliance of the noise criteria is annexed in **Appendix G**.

6 WATER MONITORING

6.1.1 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. Due to the loading requirement of a fresh water main under the box culvert, installation of the base slab at Box Culvert ID4 has been scheduled to be commenced in December 2016.

6.1.2 The construction works are temporarily suspended until the utilities diversion works complete. The 4-week post construction water quality monitoring will be commenced after the installation of the base slab finishes, hence the completion of the box culvert works.

7 WASTE MANAGEMENT

7.1.1 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.

7.1.2 As advised by the Contractor, a total of 1,115m^3 of excavated material has been generated. 453m^3 of inert C&D materials was disposed of at public fill to Tuen Mun Area 38. 177m^3 inert C&D materials were reused on site. 120m^3 of general refuse was disposed of at North East New Territories (NENT) Landfill. 2m^3 of plastics was collected by recycling contractor in the reporting month. No paper/cardboard packaging was collected by recycling contractor in the reporting month. No metals were collected by recycling contractor in the reporting month. 0.8m^3 of chemical waste was collected by licensed contractor in the reporting period. Details of the waste management data are presented in **Appendix K**.

8 ENVIRONMENTAL SITE INSPECTION AND AUDIT

8.1 Site Inspection

8.1.1 Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. A summary of the site inspection is provided in **Appendix L**.

8.1.2 In the reporting month, 5 site inspections were carried out on 3, 11, 19, 24 and 31 October 2016. The one held on 31 October 2016 was a joint inspection with the IEC, ER, ET and Contractor. No site inspection was conducted by the EPD during the reporting month. No non-compliance was recorded during the site inspection. A summary of the reminders and observations recorded during the site inspections are presented in **Table 8.1**.

Table 8.1 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	N/A	N/A	N/A
Air Quality	11 Oct 2016	Observation: Mud and debris was observed on the public road opposite to SA 14. The Contractor should clear it up and make sure the vehicles being washed to remove mud and debris before leaving the site.	No tyre mark has been observed during the 19 October 2016 site inspection.
Noise	N/A	N/A	N/A
Waste / Chemical Managem-ent	24 Oct 2016	Observation: Unmarked container observed placed on site near SA22. Contractor is reminded to provide proper treatment (Drip Tray for Oily Material, etc.)	Drip trays have been provided for the containers as observed during the 31 October 2016 site inspection.
Landscape & Visual	N/A	N/A	N/A
Permits / Licenses	N/A	N/A	N/A

9 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

9.1.1 The Contractor has implemented the relevant environmental mitigation measures as specified in the EIA Reports, EPs and updated EM&A Manual. The implementation status of environmental mitigation measures during the reporting period is summarized in **Appendix L**.

10 SUMMARY OF EP SUBMISSION IN THE REPORTING MONTH

10.1.1 The status of the required submission under the EP during the reporting period is summarized in **Table 10.1**.

Table 10.1 Status of Required Submission under Environmental Permit

EP Condition	Submission	Submission Date
Condition 3.3	Monthly EM&A Report for September 2016	14 October 2016

11 ENVIRONMENTAL NON-CONFORMANCE

11.1 Summary of Monitoring Exceedances

11.1.1 No exceedance of Action and Limit Level was recorded for 24-hour TSP monitoring at the monitoring location AM1(SR77) in the reporting month.

11.1.2 No exceedance of Action and Limit Level was recorded for 1-hour TSP monitoring at the monitoring location AM1(SR77) in the reporting month.

11.1.3 No noise complaint was received in the reporting month, so no Action Level exceedance was recorded. Also, no Limit Level exceedance of noise monitoring was recorded in the reporting month.

11.2 Summary of Environmental Non-Compliance

11.2.1 No environmental non-compliance was recorded in the reporting month. The cumulative statistics are provided in **Appendix N**.

11.3 Summary of Environmental Complaints

11.3.1 No environmental complaints were received in the reporting month. The cumulative statistics are provided in **Appendix N**.

11.4 Summary of Environmental Summon and Successful Prosecutions

11.4.1 No environmental related prosecution or notification of summons was received in the reporting month. The cumulative statistics are provided in **Appendix N**.

12 FUTURE KEY ISSUES

12.1 Construction Programme for the Next Month

12.1.1 The major construction works in the coming reporting month are anticipated to include:

- Boundary Wall for Pumping Station;
- Cable Detection and Trial Trenches;
- Construction of Remaining Slab of Box Culvert ID05;
- Demolition of Valve Control House;
- Footbridge Construction;
- Gabion wall Construction;
- Re-provisioning of Kiu Tau Footbridge;
- Storm Drains Laying;
- Noise Barrier Construction;
- Pier/ Pier Table Construction;
- Pile Cap Works;
- Portal Beam Construction;
- Retaining Wall Construction;
- Road Works;
- Sewer Works;
- Slope Reinstatement Works Near Bridge E;
- Utilities Duct Layout;
- Viaduct Segment Erection; and
- Water Main Laying.

12.2 Key Issues for the Coming Month

12.2.1 Key issues to be considered in the coming month are anticipated to include:

- Site discharges should be properly collected and treated prior to discharge;
- Properly maintain all drainage facilities and wheel washing facilities on site;
- Expose slopes and dusty stockpile should be covered up properly if no work will be conducted;

- Operation of construction plant should be sequenced where practicable;
- Good housekeeping should be maintained and general refuse should be removed regularly;
- Chemical waste should be stored, handled and disposed of properly;
- Properly store and label oils and chemicals on site; and
- A spill response procedure shall be in place and absorption material available for minor spillages.

12.3 Monitoring Schedule for the Next Month

12.3.1 The tentative schedule for environmental monitoring for the coming month is provided in **Appendix D**.

13 CONCLUSIONS AND RECOMMENDATIONS

13.1 Conclusions

13.1.1 The construction phase EM&A programme of the Project commenced on 5 November 2013.

13.1.2 The 1-hr TSP, 24-hr TSP and noise monitoring were carried out in the reporting period.

13.1.3 No exceedance of Action and Limit Level was recorded for 24-hour TSP monitoring at the monitoring location AM1(SR77) in the reporting month.

13.1.4 No exceedance of Action and Limit Level was recorded for 1-hour TSP monitoring at the monitoring location AM1(SR77) in the reporting month.

13.1.5 No noise complaint was received in the reporting month, so no Action Level exceedance was recorded. Also, no Limit Level exceedance of noise monitoring was recorded in the reporting month.

13.1.6 Five (5) environmental site inspections were carried out in the reporting month. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site audit.

Temporary Suspension of Box Culvert Works and Water Quality Monitoring

13.1.7 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. Due to the loading requirement of a fresh water main under the box culvert, installation of the base slab at Box Culvert ID4 has been scheduled to be commenced in December 2016.

13.1.8 The construction works are temporarily suspended until the utilities diversion works complete. The 4-week post construction water quality monitoring will be commenced after the installation of the base slab finishes, hence the completion of the box culvert works.

13.2 Recommendations

13.2.1 According to the environmental site inspections performed in the reporting month, the following recommendation was provided:

Air Quality

- Ensure all vehicles are properly washed to remove mud and debris before leaving the site.

Chemical and Waste Management

- Provide proper chemical and chemical waste management.

Figure

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

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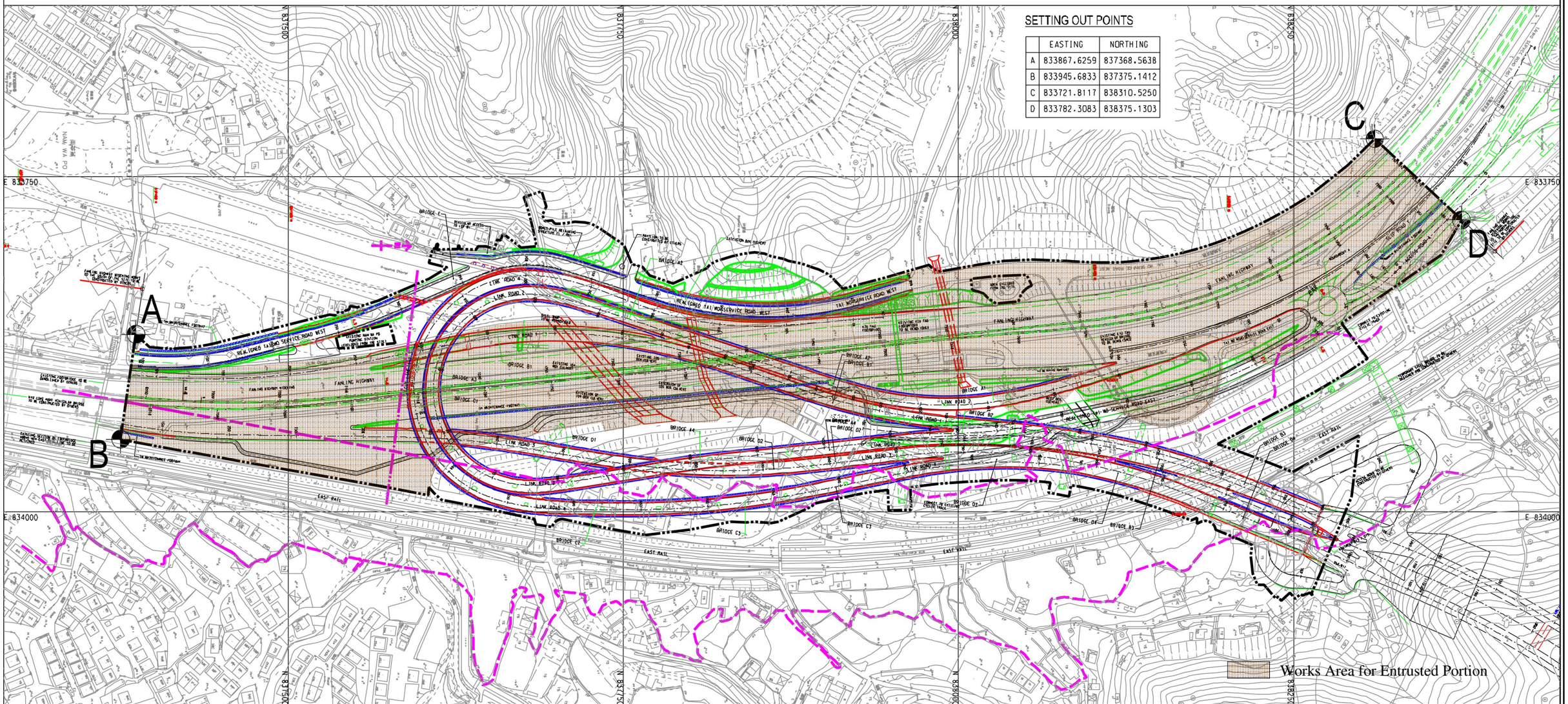
SETTING OUT POINTS

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



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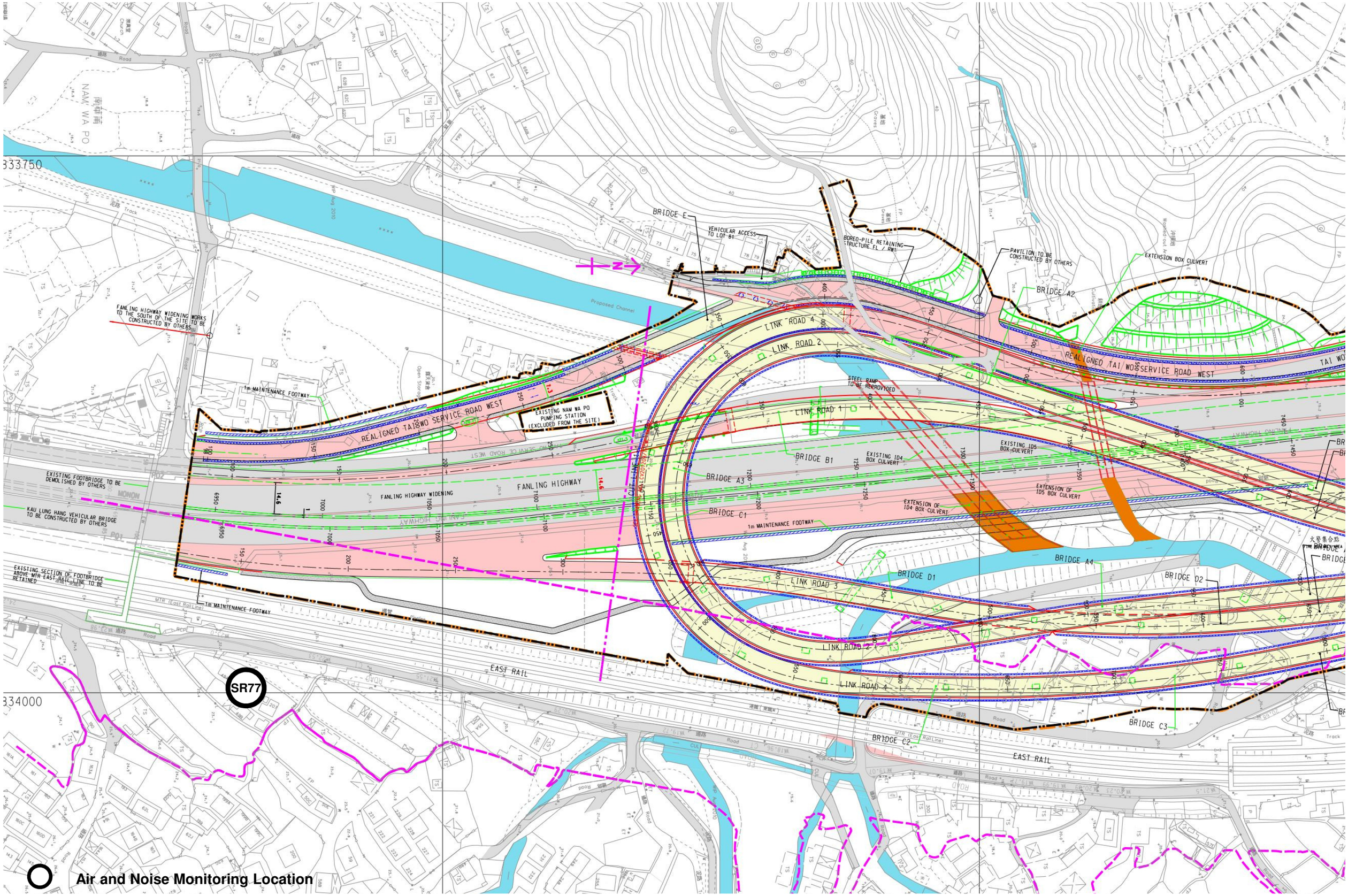
MEINHARDT

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

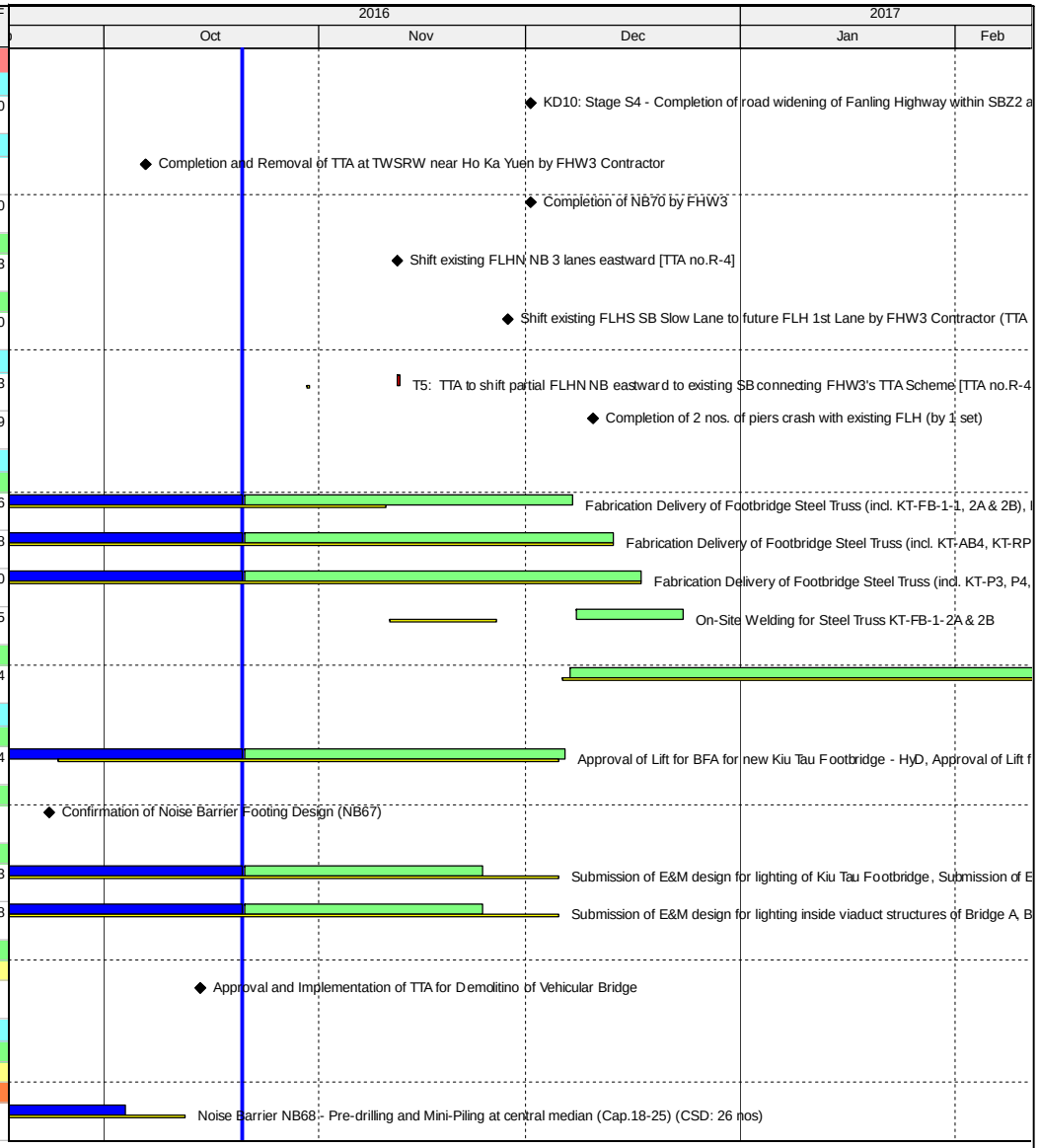
Figure 1: Demarcation of Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling – Stage 2



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

Appendix A
Construction Programme

Activity ID	Activity Name	OD	RD	Start	Finish	TF
3-Month Rolling Programme 2016-10-21						
Key Dates (Contractual)						
KD-1300	KD10: Stage S4 - Completion of road widening of Fanling Highway within SBZ2 and allow access for HY/2012/06	0	0		01-Dec-16*	0
Dependent Milestones from Other Contracts						
MS-DM03	Completion and Removal of TTA at TWSRW near Ho Ka Yuen by FHW3 Contractor	0	0		07-Oct-16 A	
MS-DM04	Completion of NB70 by FHW3	0	0		01-Dec-16*	0
Related to North Buffer Zone						
MS-NBZ020	Shift existing FLHN NB 3 lanes eastward [TTA no.R-4]	0	0	12-Nov-16*		-13
Related to South Buffer Zone						
MS-SBZ110	Shift existing FLHS SB Slow Lane to future FLH 1st Lane by FHW3 Contractor (TTA stage S10)	0	0	28-Nov-16*		0
Major Milestones and Events						
MS-1050	T5: TTA to shift partial FLHN NB eastward to existing SB connecting FHW3's TTA Scheme [TTA no.R-4]	1	1	12-Nov-16*	12-Nov-16	-13
MS-0120	Completion of 2 nos. of piers crash with existing FLH (by 1 set)	0	0		10-Dec-16	59
Major Procurement & Delivery						
Footbridge Steel Truss						
MM-3000	Fabrication Delivery of Footbridge Steel Truss (incl. KT-FB-1-1, 2A & 2B), Fanling Highway Section	73	48	30-Aug-16 A	07-Dec-16	6
MM-3010	Fabrication Delivery of Footbridge Steel Truss (incl. KT-AB4, KT-RP3 & KT-P5), Western Side	88	46	30-Aug-16 A	13-Dec-16	18
MM-3020	Fabrication Delivery of Footbridge Steel Truss (incl. KT-P3, P4, KT-RP-1 & 2, KT-SC-1, KT-AB1 & AB2), Eastern Side	92	50	30-Aug-16 A	17-Dec-16	10
MM-3030	On-Site Welding for Steel Truss KT-FB-1-2A & 2B	14	14	08-Dec-16	23-Dec-16	5
Lift for New Kiu Tau Footbridge						
MM-4000	Procurement, Fabrication and delivery of Lift	120	120	07-Dec-16	12-May-17	94
Design and Submissions						
Statutory Approval						
PRE-1410	Approval of Lift for BFA for new Kiu Tau Footbridge - HyD	60	40	27-Jul-16 A	06-Dec-16	94
Design Confirmation						
PRE-1560	Confirmation of Noise Barrier Footing Design (NB67)	0	0		23-Sep-16 A	
Method Statement and Design (Major) Approved by AECOM						
PRE-2030	Submission of E&M design for lighting of Kiu Tau Footbridge	60	30	05-Sep-16 A	24-Nov-16	53
PRE-2040	Submission of E&M design for lighting inside viaduct structures of Bridge A, B, C & D	60	30	01-Apr-16 A	24-Nov-16	128
Temporary Traffic Arrangement (TTA) Submission and Approval						
TTA for Demolition of Kiu Tau Vehicular Bridge						
PRE-6400	Approval and Implementation of TTA for Demolition of Vehicular Bridge	0	0		15-Oct-16 A	
Section IA & IB - Fanling Highway Widening (KD-1 & KD-2)						
Fanling Highway South Portion between CH6935 and CH7470						
Fanling Highway Zone 1 between CH6935 and CH7130 (within SBZ2)						
At-Grade Roadworks (195m)						
FHW-1210	Noise Barrier NB68 - Pre-drilling and Mini-Piling at central median (Cap.18-25) (CSD: 26 nos)	80	0	21-May-16 A	04-Oct-16 A	



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Actual Work
Remaining Work
Summary Bar
Critical Remaining Work
Milestone
Project Baseline Bar

CEDD Contract No. CV/2012/09

Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

3-Month Rolling Programme

Programme ID: 3MPR039 (Data Date: 21-Oct-16)_____Page 1 of 8

3-Month Rolling Programme updated to 2016-10-21

Date	Revision	Checked	Approved
20-Oct-16	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
FHW-1220	Noise Barrier NB68 - Footing at central median (Bay 1 - 4, 77m)	63	63	21-Oct-16	05-Jan-17	0
FHW-1130*	Pipe Laying - DN1200 Watermains (CHC) along Fanling Highway (80m long, 4m depth)	182	76	20-Feb-14 A	20-Jan-17	156
FHW-1150	Noise Barrier NB70 - Footing adjacent to SB lane (30m)	70	70	02-Dec-16	03-Mar-17	37
FHW-1230	Road Formation (Middle Part: FLH NB Fast lanes), except CH.6935 - CH.7035	50	50	06-Jan-17	11-Mar-17	0
Fanling Highway Zone 2 between CH7130 and CH7290						
At-Grade Roadworks (160m)						
FHW-2220	Noise Barrier NB68A - Footing at central median (Bay 1 - 12, 141m)	70	58	27-Jul-16 A	29-Dec-16	0
FHW-2360	Temporary Platform for Mini-Pile Installation Works within WSD Restriction Zone	40	40	16-Dec-16*	10-Feb-17*	1
FHW-2230	Road Formation & Pavement and Central Barrier (Middle Part: FLH NB 4th lanes)	55	55	30-Dec-16	11-Mar-17	0
Fanling Highway Zone 3 between CH7290 and CH7380						
Box Culvert Extension - ID4						
ID4-3090	Bay 1 - Remaining Base Slab (To be carried out after diversion of DN1400 water mains)	95	95	21-Nov-16*	21-Mar-17	87
At-Grade Roadworks (130m)						
FHW-3210	Noise Barrier NB68A - Pre-drilling and Mini-Piling at central median (CSD: 20 nos)	50	6	21-May-16 A	27-Oct-16	22
FHW-3220B	Noise Barrier NB68A - Footing at central median (Bay 14 - 18, 50m)	45	45	01-Nov-16	22-Dec-16	11
FHW-3220A	Noise Barrier NB68A - Footing at central median (Bay 13, 30m)	73	58	11-Oct-16 A	29-Dec-16	0
FHW-3230	Road Formation & Central Barrier (Middle Part: FLH NB 4th lanes)	55	55	30-Dec-16	11-Mar-17	0
Fanling Highway North Portion between CH7470 and CH7925						
Fanling Highway Zone 4 between CH7380 and CH7470						
At-Grade Roadworks (90m)						
FHW-4210	Road Drainage, Road Formation & Pavement (FLH SB 3rd lanes)	33	33	14-Dec-16	24-Jan-17	3
FHW-4220	Road Formation & Pavement, and Central Barrier (Middle Part: FLH NB 4th lanes)	55	55	30-Dec-16	11-Mar-17	0
Fanling Highway Zone 5 between CH7470 and CH7600 (Provision of Kiu Tau Footbridge)						
Kiu Tau Footbridge Reprovision (East)						
FHW-5010C1	KT-P2 & P3 - Pile Cap	65	0	01-Aug-16 A	11-Oct-16 A	
FHW-5030	Erection of Temporary Support and Working Platform at Central Median for Steel Truss Installation	21	21	21-Oct-16*	14-Nov-16	39
FHW-5010D2	KT-P4 - Pier Construction	40	23	03-Sep-16 A	16-Nov-16	11
FHW-5010C2	KT-P2 & P3 - Pier Construction	28	28	21-Oct-16	22-Nov-16	6
FHW-5010D3	KT-P4 - RC Deck & Bearing Installation	18	18	22-Nov-16	12-Dec-16	11
FHW-5010C3	KT-P2 & P3 - RC Deck & Bearing Installation	18	18	28-Nov-16	17-Dec-16	6
FHW-5010A1	KT-AB1 (North Portion) - Pile Cap, Abutment and Bearing Installation	65	51	01-Aug-16 A	19-Dec-16	5
FHW-5010B	KT-AB2 - Pile Cap, Abutment and Bearing Installation	65	54	04-Aug-16 A	22-Dec-16	2
FHW-5010A2	KT-AB1 (South Portion) - Pile Cap, Abutment and Bearing Installation	44	68	05-Sep-16 A	11-Jan-17	10
FHW-5040	Steel Truss Installation across Fanling Highway	16	16	24-Dec-16	14-Jan-17	5

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CEDD Contract No. CV/2012/09

Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

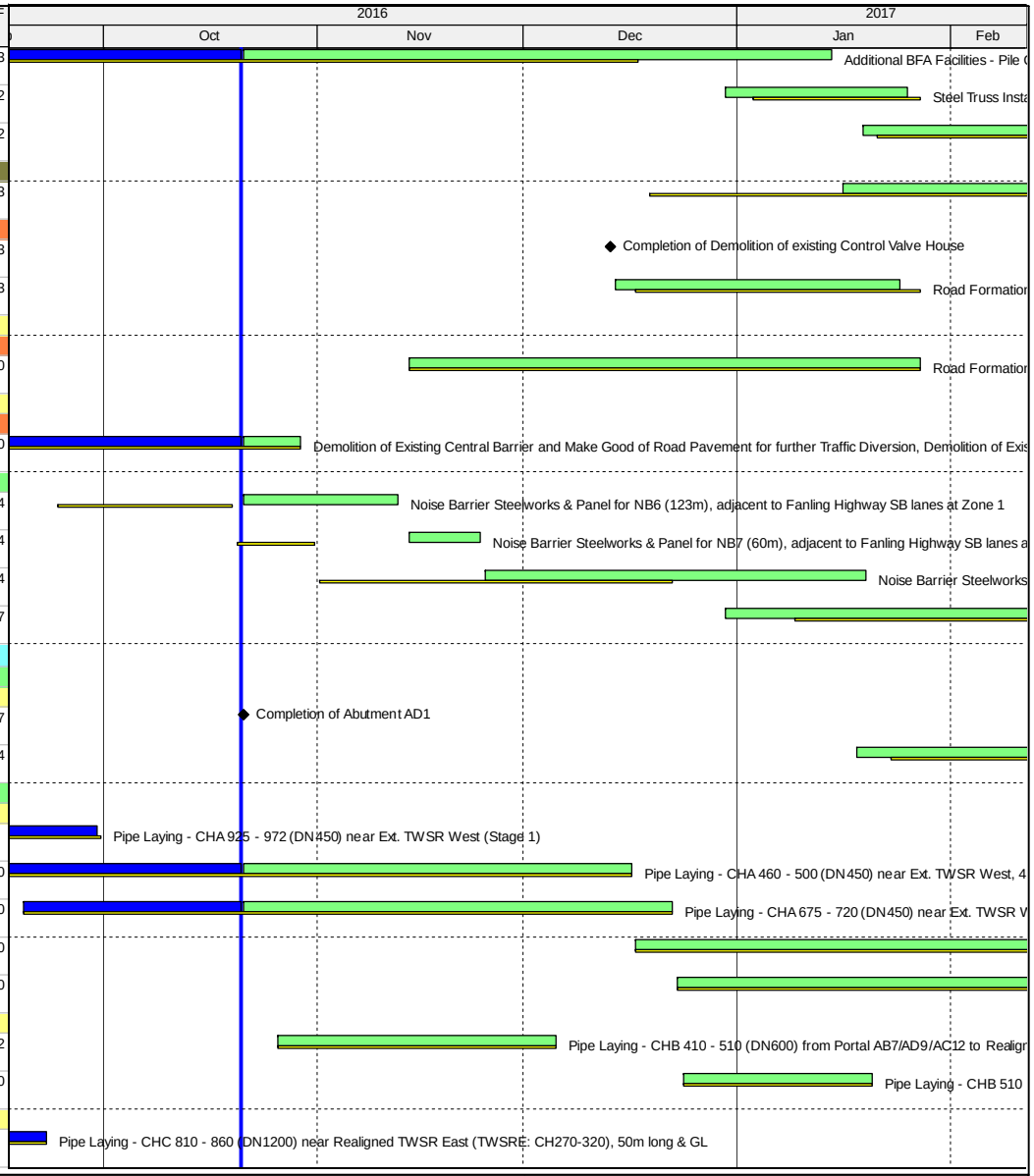
3-Month Rolling Programme

Programme ID: 3MPR039 (Data Date: 21-Oct-16)_____Page 2 of 8

3-Month Rolling Programme updated to 2016-10-21

Date	Revision	Checked	Approved
20-Oct-16	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
FHW-5090	Additional BFA Facilities - Pile Cap & Sump Pit (covered by VO no. 59)	50	71	01-Aug-16 A	14-Jan-17	93
FHW-5020	Steel Truss Installation at TWSR East	22	22	30-Dec-16	25-Jan-17	2
FHW-5050	Installation of Bridge Decking and Cladding	32	32	19-Jan-17	03-Mar-17	2
Provision of BFA Facilities (Lift)						
FHW-L-1000	RC Works for Lift Shaft	55	55	16-Jan-17	27-Mar-17	93
At-Grade Road Works (130m)						
FHW-5130	Completion of Demolition of existing Control Valve House	0	0		13-Dec-16	3
FHW-5150	Road Formation & Pavement (FLH SB 3rd lane)	33	33	14-Dec-16	24-Jan-17	3
Fanling Highway Zone 6 between CH7600 and CH7660 (Existing Vehicular Bridge)						
At-Grade Roadworks (60m)						
FHW-6120	Road Formation & Pavement (FLH SB 1st - 3rd lanes)	62	62	14-Nov-16	27-Jan-17	0
Fanling Highway Zone 7 between CH7660 and CH7925						
At-Grade Roadworks (265m)						
FHW-7120	Demolition of Existing Central Barrier and Make Good of Road Pavement for further Traffic Diversion	38	8	22-Aug-16 A	29-Oct-16	0
Remaining Works for Noise Barrier along widened Fanling Highway						
FHW-NB-120	Noise Barrier Steelworks & Panel for NB6 (123m), adjacent to Fanling Highway SB lanes at Zone 1	20	20	21-Oct-16*	12-Nov-16	304
FHW-NB-130	Noise Barrier Steelworks & Panel for NB7 (60m), adjacent to Fanling Highway SB lanes at Zone 1	10	10	14-Nov-16	24-Nov-16	304
FHW-NB-140	Noise Barrier Steelworks & Panel for NB71 (254m), adjacent to Fanling Highway SB lanes at Zones 2,3 & 4	45	45	25-Nov-16	19-Jan-17	304
FHW-NB-220	Noise Barrier Steelworks & Panel for NB68A (225m), Fanling Highway central median at Zones 2 & 3	35	35	30-Dec-16	16-Feb-17	7
Section II - Remainder of the Works (KD-3)						
At Grade Link Road at Fanling Highway Interchange						
Link Road 3 (near Abutment AD1)						
FHI-LR3-3010	Completion of Abutment AD1	0	0		21-Oct-16	77
FHI-LR3-3020	Construction of Retaining Wall beside Abutment AD1	120	120	18-Jan-17	21-Jun-17	4
WSD Works						
DN450 Fire Mains (CHA)						
WA-3070	Pipe Laying - CHA 925 - 972 (DN450) near Ext. TWSR West (Stage 1)	95	0	10-Jun-16 A	30-Sep-16 A	
WA-2010	Pipe Laying - CHA 460 - 500 (DN450) near Ext. TWSR West, 40m	70	49	01-Sep-16 A	16-Dec-16	0
WA-3010	Pipe Laying - CHA 675 - 720 (DN450) near Ext. TWSR West, 45m	80	54	19-Sep-16 A	22-Dec-16	0
WA-2020	Pipe Laying - CHA 500 - 540 (DN450) near Ext. TWSR West, 40m	70	70	17-Dec-16	18-Mar-17	0
WA-3020	Pipe Laying - CHA 720 - 765 (DN450) near Ext. TWSR West, 45m	85	85	23-Dec-16	12-Apr-17	0
DN600 Water Mains (CHB)						
WB-1030C	Pipe Laying - CHB 410 - 510 (DN600) from Portal AB7/AD9/AC12 to Realigned TWSR East	35	35	26-Oct-16	05-Dec-16	42
WB-1060A	Pipe Laying - CHB 510 - 570 (DN600) near J-bridge	21	21	24-Dec-16	20-Jan-17	60
DN1200 Water Mains (CHC)						
WC-1120A	Pipe Laying - CHC 810 - 860 (DN1200) near Realigned TWSR East (TWSRE: CH270-320), 50m long & GL	25	0	18-Jul-16 A	22-Sep-16 A	



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Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

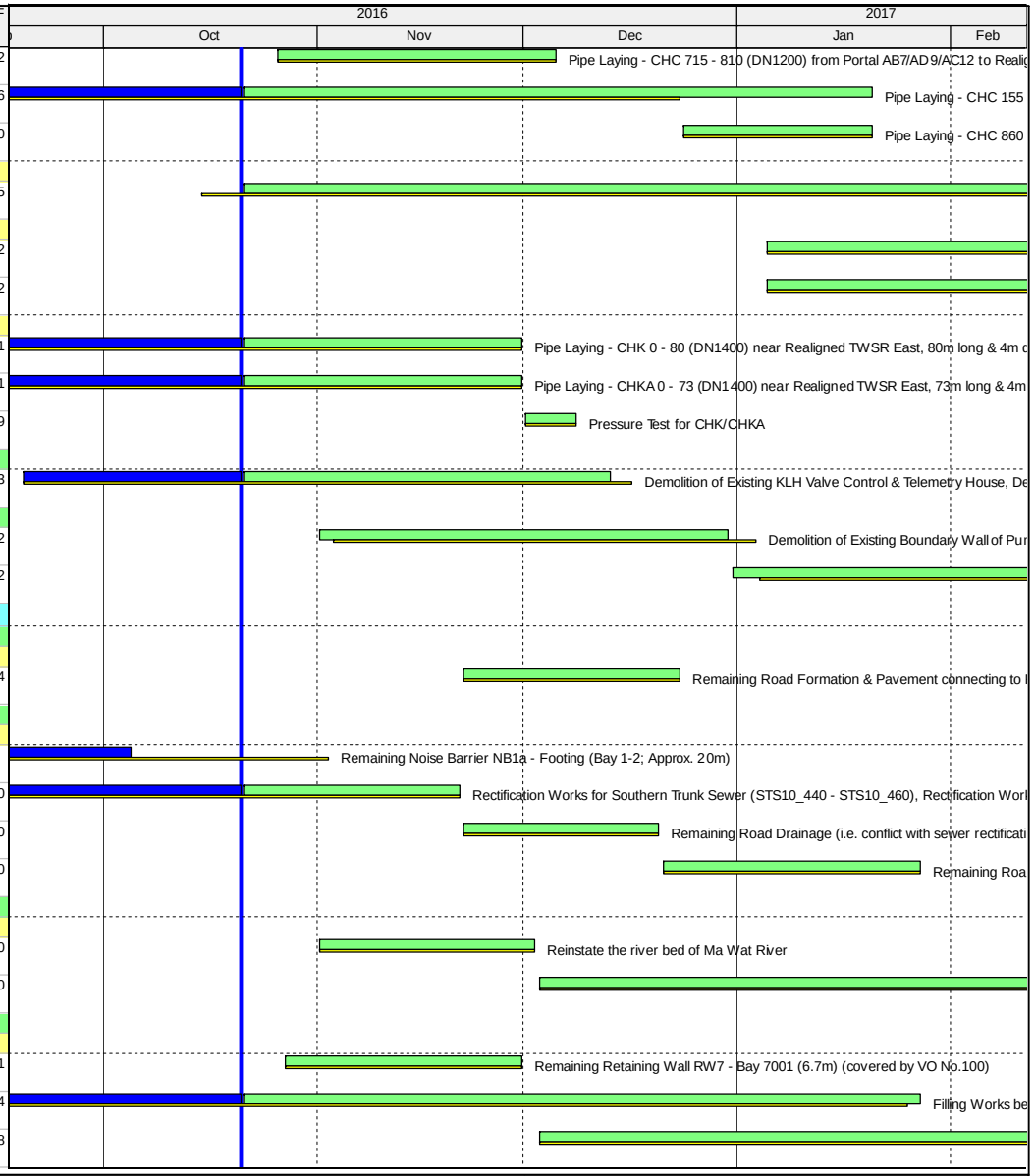
3-Month Rolling Programme

Programme ID: 3MPR039 (Data Date: 21-Oct-16)_____Page 3 of 8

3-Month Rolling Programme updated to 2016-10-21

Date	Revision	Checked	Approved
20-Oct-16	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
WC-1090C	Pipe Laying - CHC 715 - 810 (DN1200) from Portal AB7/AD9/AC12 to Realigned TWSR East	35	35	26-Oct-16	05-Dec-16	42
WC-1050A	Pipe Laying - CHC 155 - 200 (DN1200) near FLH S/B (FHW: CH6935-7130), 45m long, 4m depth	120	76	15-Oct-14 A	20-Jan-17	156
WC-1120B	Pipe Laying - CHC 860 - 890 (DN1200) near J-Bridge	21	21	24-Dec-16	20-Jan-17	60
Twin DN1400 Water Mains (CHE & CHG)						
WE-1050	Pipe Laying - CHE & CHG 300 - 380 (Twins DN1400) from Portal AB7AD9/AC12 to new connection point	131	131	21-Oct-16	01-Apr-17	5
DN2200 Water Mains (CHF)						
WF-1050 A	Construction of Launching Pit for DN2200 (CHF), Section 3	55	55	05-Jan-17	16-Mar-17	2
WF-1000B	Construction of Launching Pit for DN2200 (CHF), Section 1 (near Pier AB3)	60	60	05-Jan-17	22-Mar-17	72
DN2300 Water Mains and Leakage Collection System (CHJ & CHKA/CHK)						
WJ-3010	Pipe Laying - CHK 0 - 80 (DN1400) near Realigned TWSR East, 80m long & 4m depth	55	35	17-Sep-16 A	30-Nov-16	101
WJ-3020	Pipe Laying - CHKA 0 - 73 (DN1400) near Realigned TWSR East, 73m long & 4m depth	90	35	17-Sep-16 A	30-Nov-16	101
WJ-3030	Pressure Test for CHK/CHKA	7	7	01-Dec-16	08-Dec-16	319
Kau Lung Hang Valve Control & Telemetry House Reprovision						
VCTH-1060	Demolition of Existing KLH Valve Control & Telemetry House	75	46	19-Sep-16 A	13-Dec-16	3
Existing Nam Wa Po Trunk Sewage Pumping Station (PST3)						
PS-1000	Demolition of Existing Boundary Wall of Pumping Station (PST3)	50	50	01-Nov-16*	30-Dec-16	32
PS-1010	Construction of New Boundary Wall for Pumping Station (PST3)	90	90	31-Dec-16	27-Apr-17	32
Stage 1A - Realignment of Tai Wo Service Road West (KD-7)						
TWSRW Zone 1 betweeen CH100 and CH155						
At-Grade Roadworks						
TWSRW-1160B	Remaining Road Formation & Pavement connecting to FHW3 Contractor	28	28	22-Nov-16	23-Dec-16	4
TWSRW Zone 2 betweeen CH155 and CH280						
At-Grade Roadworks						
TWSRW-2130B	Remaining Noise Barrier NB1a - Footing (Bay 1-2; Approx. 20m)	50	0	02-Sep-16 A	05-Oct-16 A	
TWSRW-2150	Rectification Works for Southern Trunk Sewer (STS10_440 - STS10_460)	58	27	12-Sep-16 A	21-Nov-16	0
TWSRW-2160	Remaining Road Drainage (i.e. conflict with sewer rectification works)	25	25	22-Nov-16	20-Dec-16	0
TWSRW-2130C	Remaining Road Formation & Pavement (above Southern Trunk Sewer)	30	30	21-Dec-16	27-Jan-17	0
TWSRW Zone 4 betweeen CH315 and CH376						
Construction of Bridge E						
TWSRW-4100B	Reinstate the river bed of Ma Wat River	28	28	01-Nov-16*	02-Dec-16	250
TWSRW-4100C	Construction of Gabion Wall and Remaining Slope Reinstatement Works	93	93	03-Dec-16	31-Mar-17	250
TWSRW Zone 5 betweeen CH376 and CH520						
At-Grade Roadworks						
TWSRW-5100C	Remaining Retaining Wall RW7 - Bay 7001 (6.7m) (covered by VO No.100)	30	30	27-Oct-16	30-Nov-16	61
TWSRW-5120A	Filling Works between Retaining Wall RW7 and RW8	192	82	07-Jun-16 A	27-Jan-17	94
TWSRW-5110D	Remaining Retaining Wall RW9 - Bay 9001 & Coping Block (covered by VO No.116)	55	55	03-Dec-16	15-Feb-17	288



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Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

3-Month Rolling Programme

Programme ID: 3MPR039 (Data Date: 21-Oct-16)_____Page 4 of 8

3-Month Rolling Programme updated to 2016-10-21

Date	Revision	Checked	Approved
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Activity ID	Activity Name	OD	RD	Start	Finish	TF
TWSRW-5160	Construction of Extended Podium near RW7 incl. demolition of existing staircase and filling works (covered by VO No.100)	85	85	01-Dec-16	20-Mar-17	61
TWSRW Zone 7 betweeen CH530 and CH640						
At-Grade Roadworks						
TWSRW-7190	Implementation of TTA - Scheme W3C (shift TWSRW SB traffic westward, i.e. permanent alignment)	0	0	17-Dec-16		206
TWSRW Zone 8 betweeen CH640 and CH695						
Kiu Tau Footbridge Reprovision (West)						
TWSRW-8020A	KT-P1 & P5 - Pier Construction	28	28	21-Oct-16	22-Nov-16	10
TWSRW-8020A	KT-P1 & P5 - RC Deck & Bearing Installation	18	18	28-Nov-16	17-Dec-16	10
TWSRW-8030	KT-AB4 - Pile Cap, Abutment and Bearing Installation	36	53	02-Dec-15 A	21-Dec-16	5
TWSRW-8040	Steel Truss Installation at TWSR West	12	12	31-Dec-16	14-Jan-17	5
At-Grade Roadworks						
TWSRW-8100	Fill Replacement Works	95	95	16-Jan-17	19-May-17	89
Remainder of the Works						
Utilities Laying Works						
UU-1030	Utilities Duct Laying in Area 3, Phase 1 (along existing TWSRW, Approx. 150m) (by utilities undertakers)	105	7	04-May-16 A	27-Oct-16	4
UU-1030B	Utilities Duct Laying in Area 3, Temp Works, Towngas - DN400, approx. 30m	4	4	15-Dec-16*	19-Dec-16	0
UU-1040A	Utilities Duct Laying in Area 4, Phase 2, Towngas - DN600 & DN400, approx. 50m (by their own TTA)	121	114	15-Sep-16 A	13-Mar-17	595
Switch-Over of Existing Utilitiess						
UU-SO-1000	Completion of Utilities Duct Laying (Telecom) by Interface Contractor, HY/2012/06	0	0		31-Oct-16*	0
UU-SO-2000	Cabling Works for CLP 132kV (300mVA)	21	21	01-Nov-16*	24-Nov-16	62
UU-SO-2020	Cabling Works for CLP 11kV	21	21	01-Nov-16*	24-Nov-16	62
UU-SO-3520	Temporary Diversion of DN400 Gas Mains	9	9	20-Dec-16*	31-Dec-16	33
UU-SO-2500	Switch-over Works (CLP 132kV, 300mVA)	90	90	01-Jan-17*	31-Mar-17	46
UU-SO-2520	Switch-over Works (CLP 11kV)	90	90	01-Jan-17*	31-Mar-17	46
UU-SO-1010	Cabling Works for telecom utilities	270	270	01-Nov-16	28-Jul-17	0
Stage N4A & N4B - Realignment of Tai Wo Service Road East (KD-13 & KD-14)						
TWSRE Zone 1 between CH100 and CH270						
At-Grade Roadworks						
TWSRE-1140A*	Pipe laying - DN1400 Watermains (CHKA) along Realigned TWSR East	90	35	17-Sep-16 A	30-Nov-16	101
TWSRE-1170	Remaining Noise Barrier NB3 Stem Wall (a total of 24m long)	55	55	06-Dec-16	17-Feb-17	42
TWSRE-1140B*	Pipe laying - DN600 & DN1200 Watermains (CHB & CHC) along Realigned TWSR East	132	132	26-Oct-16	08-Apr-17	0
TWSRE Zone 2 between CH270 and CH380						
At-Grade Roadworks						
TWSRE-2030A*	Pipe laying - DN600 & DN1200 Watermains (CHB & CHC) along Realigned TWSR East	25	0	17-Jul-15 A	22-Sep-16 A	
TWSRE-2050	Erection of Scaffolding for Demolition Works of Kiu Tau Vehicular Bridge	60	0	20-Aug-16 A	05-Oct-16 A	

Actual Work
Remaining Work
Summary Bar
Critical Remaining Work
Milestone
Project Baseline Bar

CEDD Contract No. CV/2012/09

Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

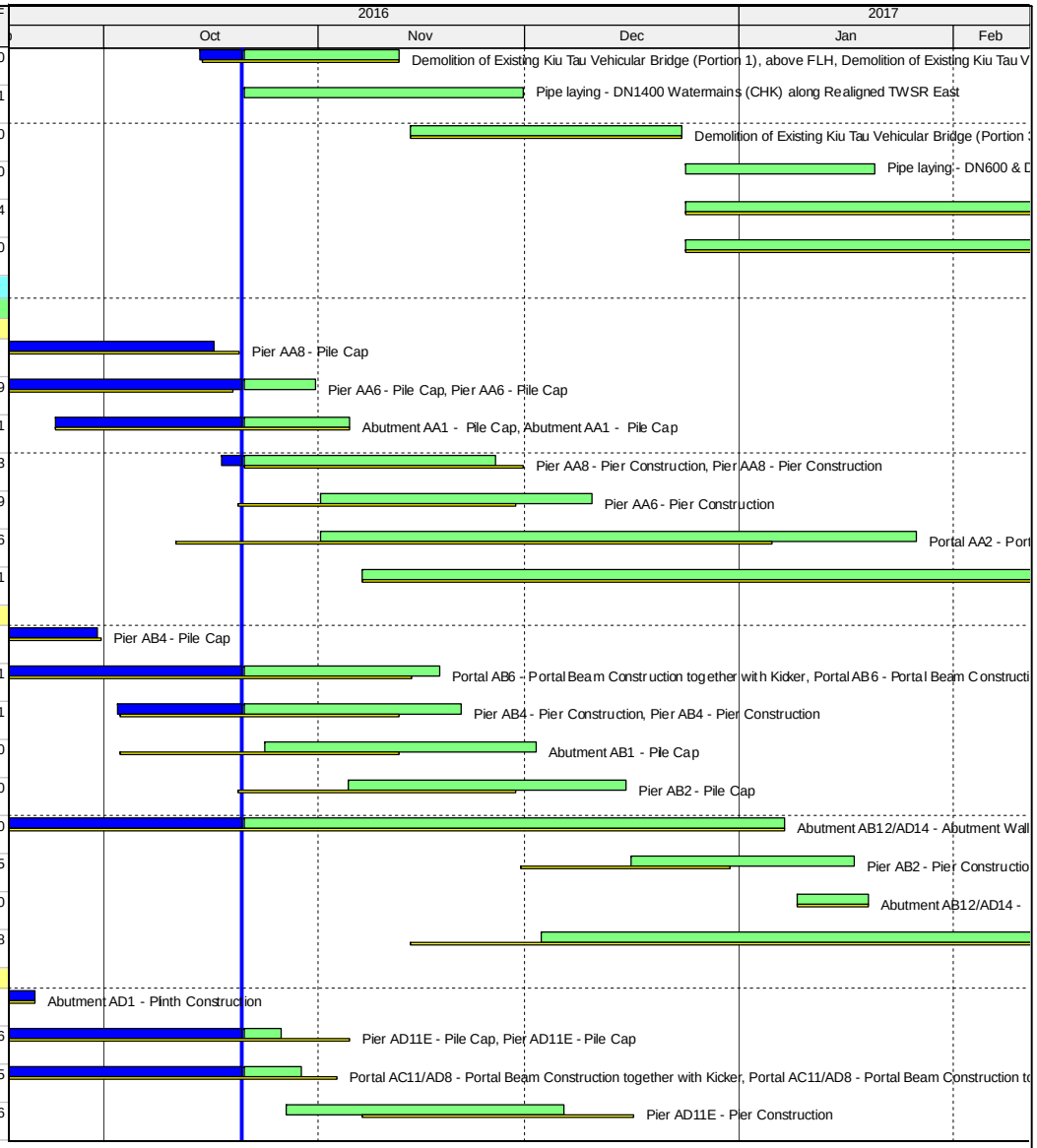
3-Month Rolling Programme

3-Month Rolling Programme updated to 2016-10-21

Date	Revision	Checked	Approved
20-Oct-16	Rev.1	SL	

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

Activity ID	Activity Name	OD	RD	Start	Finish	TF
TWSRE-2060A	Demolition of Existing Kiu Tau Vehicular Bridge (Portion 1), above FLH	25	20	15-Oct-16 A	12-Nov-16	0
TWSRE-2030B*	Pipe laying - DN1400 Watermains (CHK) along Realigned TWSR East	55	35	17-Sep-16 A	30-Nov-16	101
TWSRE-2060C	Demolition of Existing Kiu Tau Vehicular Bridge (Portion 3), above existing TWSRE	35	35	14-Nov-16	23-Dec-16	0
TWSRE-2030B*	Pipe laying - DN600 & DN1200 Watermains (CHB & CHC) along Realigned TWSR East, conflicted with J-bridge	21	21	24-Dec-16	20-Jan-17	60
TWSRE-2080	Remaining Noise Barrier NB3 Stem Wall (total 2 bays)	45	45	24-Dec-16	24-Feb-17	84
TWSRE-2060B	Demolition of Existing Kiu Tau Vehicular Bridge (Portion 2), above new TWSRE	60	60	24-Dec-16	14-Mar-17	0
Stage 1C - Viaduct Structure & TCSS Civil Provisions (KD-9)						
Foundation & Pier Construction						
Bridge A						
BA-08-1020	Pier AA8 - Pile Cap	35	0	15-Aug-16 A	17-Oct-16 A	
BA-06-1020	Pier AA6 - Pile Cap	40	9	23-Jul-16 A	31-Oct-16	39
BA-01-1020	Abutment AA1 - Pile Cap	35	14	24-Sep-16 A	05-Nov-16	31
BA-08-1030	Pier AA8 - Pier Construction	35	32	18-Oct-16 A	26-Nov-16	3
BA-06-1030	Pier AA6 - Pier Construction	35	35	01-Nov-16	10-Dec-16	39
BA-02-1050	Portal AA2 - Portal Beam Construction together with Kicker	72	72	01-Nov-16*	26-Jan-17	6
BA-01-1020B	Abutment AA1 - Abutment Wall	80	80	07-Nov-16	17-Feb-17	31
Bridge B						
BB-04-1020	Pier AB4 - Pile Cap	35	0	17-Aug-16 A	30-Sep-16 A	
BB-06-1050	Portal AB6 - Portal Beam Construction together with Kicker	100	25	06-Jun-16 A	18-Nov-16	31
BB-04-1030	Pier AB4 - Pier Construction	35	27	03-Oct-16 A	21-Nov-16	11
BB-01-1020	Abutment AB1 - Pile Cap	35	35	24-Oct-16*	02-Dec-16	0
BB-02-1020	Pier AB2 - Pile Cap	35	35	05-Nov-16*	15-Dec-16	0
BB-12-1020B	Abutment AB12/AD14 - Abutment Wall	120	65	15-Aug-16 A	07-Jan-17	0
BB-02-1030	Pier AB2 - Pier Construction	25	25	16-Dec-16	17-Jan-17	5
BB-12-1020C	Abutment AB12/AD14 - Plinth Construction	10	10	09-Jan-17	19-Jan-17	0
BB-01-1020B	Abutment AB1 - Abutment Wall	70	70	03-Dec-16	04-Mar-17	8
Bridge D						
BD-01-1020C	Abutment AD1 - Plinth Construction	5	0	15-Sep-16 A	21-Sep-16 A	
BD-11-1020A	Pier AD11E - Pile Cap	35	5	11-Aug-16 A	26-Oct-16	16
BD-08-1040	Portal AC11/AD8 - Portal Beam Construction together with Kicker	85	8	21-Mar-16 A	29-Oct-16	25
BD-11-1030	Pier AD11E - Pier Construction	35	35	27-Oct-16	06-Dec-16	16



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

Actual Work
Remaining Work
Summary Bar
Critical Remaining Work
Milestone
Project Baseline Bar

CEDD Contract No. CV/2012/09

Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

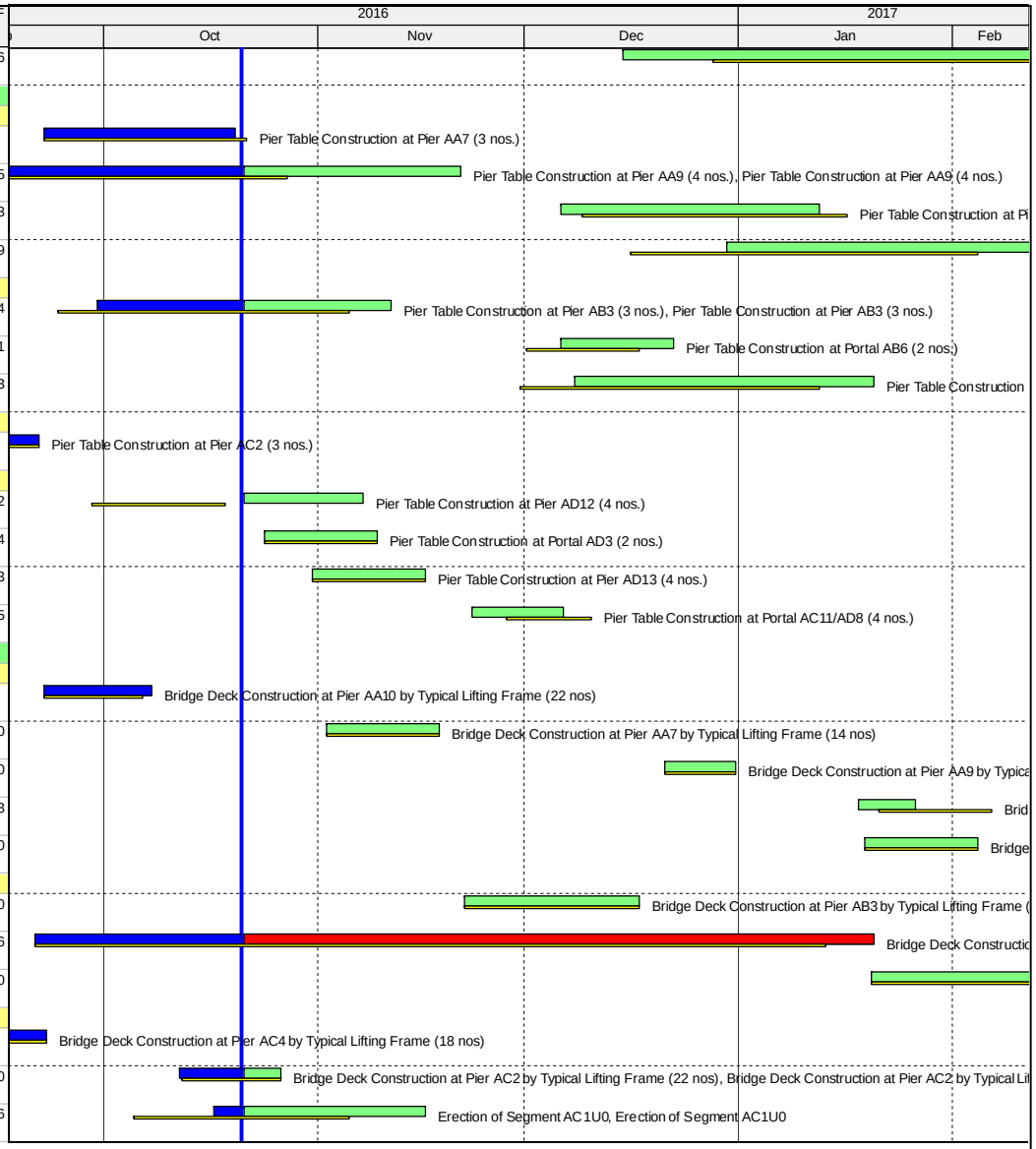
3-Month Rolling Programme

Programme ID: 3MPR039 (Data Date: 21-Oct-16)_____Page 6 of 8

3-Month Rolling Programme updated to 2016-10-21

Date	Revision	Checked	Approved
20-Oct-16	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
BD-11-1050	Portal AD11 - Portal Beam Construction together with Kicker	55	55	15-Dec-16	27-Feb-17	16
Pier Table Construction						
Bridge A						
PA-1070	Pier Table Construction at Pier AA7 (3 nos.)	29	0	22-Sep-16 A	20-Oct-16 A	
PA-1090	Pier Table Construction at Pier AA9 (4 nos.)	50	27	27-Aug-16 A	21-Nov-16	15
PA-1080	Pier Table Construction at Pier AA8 (3 nos.)	30	30	06-Dec-16	12-Jan-17	3
PA-1060	Pier Table Construction at Pier AA6 (3 nos.)	35	35	30-Dec-16	16-Feb-17	39
Bridge B						
PB-1030	Pier Table Construction at Pier AB3 (3 nos.)	35	19	30-Sep-16 A	11-Nov-16	4
PB-1060	Pier Table Construction at Portal AB6 (2 nos.)	15	15	06-Dec-16	22-Dec-16	31
PB-1040	Pier Table Construction at Pier AB4 (3 nos.)	35	35	08-Dec-16	20-Jan-17	23
Bridge C						
PC-1020	Pier Table Construction at Pier AC2 (3 nos.)	35	0	20-Aug-16 A	21-Sep-16 A	
Bridge D						
PD-1120B	Pier Table Construction at Pier AD12 (4 nos.)	15	15	21-Oct-16	07-Nov-16	42
PD-1030	Pier Table Construction at Portal AD3 (2 nos.)	15	15	24-Oct-16	09-Nov-16	4
PD-1130	Pier Table Construction at Pier AD13 (4 nos.)	15	15	31-Oct-16	16-Nov-16	103
PD-1080	Pier Table Construction at Portal AC11/AD8 (4 nos.)	12	12	23-Nov-16	06-Dec-16	25
Viaduct Bridge Segement Erection						
Bridge A						
EA-1100	Bridge Deck Construction at Pier AA10 by Typical Lifting Frame (22 nos)	14	0	22-Sep-16 A	08-Oct-16 A	
EA-1070	Bridge Deck Construction at Pier AA7 by Typical Lifting Frame (14 nos)	15	15	02-Nov-16	18-Nov-16	0
EA-1090	Bridge Deck Construction at Pier AA9 by Typical Lifting Frame (13 nos)	8	8	21-Dec-16	31-Dec-16	0
EA-1080	Bridge Deck Construction at Pier AA8 by Typical Lifting Frame (16 nos)	8	8	18-Jan-17	26-Jan-17	3
EA-1180	Bridge Deck Construction at Pier AA18 by Typical Lifting Frame (24 nos)	9	9	19-Jan-17	04-Feb-17	0
Bridge B						
EB-1030	Bridge Deck Construction at Pier AB3 by Typical Lifting Frame (22 nos)	23	23	22-Nov-16	17-Dec-16	0
EB-1110	Bridge Deck Construction at Pier AB11 by Special Lifting Frame (52 nos in which 20 nos above MTR Railway)	107	76	21-Sep-16 A	20-Jan-17	-6
EB-1120A	Erection of Segment AB12U0	40	40	20-Jan-17	14-Mar-17	0
Bridge C						
EC-1040	Bridge Deck Construction at Pier AC4 by Typical Lifting Frame (18 nos)	15	0	07-Sep-16 A	22-Sep-16 A	
EC-1020	Bridge Deck Construction at Pier AC2 by Typical Lifting Frame (22 nos)	13	5	12-Oct-16 A	26-Oct-16	0
EC-1010A	Erection of Segment AC1U0	27	23	17-Oct-16 A	16-Nov-16	36



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

Actual Work
Remaining Work
Summary Bar
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CEDD Contract No. CV/2012/09

Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

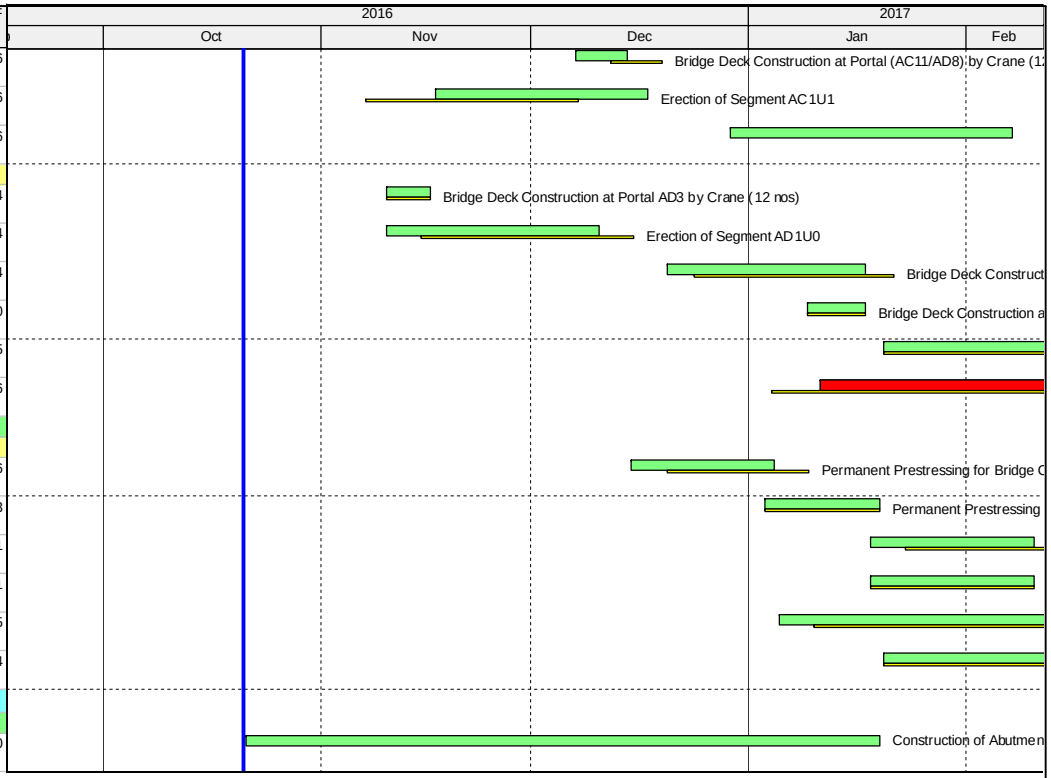
3-Month Rolling Programme

Programme ID: 3MPR039 (Data Date: 21-Oct-16)_____Page 7 of 8

3-Month Rolling Programme updated to 2016-10-21

Date	Revision	Checked	Approved
20-Oct-16	Rev.1	SL	

Activity ID	Activity Name	OD	RD	Start	Finish	TF
EC-1110	Bridge Deck Construction at Portal (AC11/AD8) by Crane (12 nos)	7	7	07-Dec-16	14-Dec-16	96
EC-1010B	Erection of Segment AC1U1	27	27	17-Nov-16	17-Dec-16	36
EC-1010C	Bridge Deck Construction at Abutment AC1 (End-span) by Falsework & Crane (16 nos)	28	28	29-Dec-16	07-Feb-17	36
Bridge D						
ED-1030	Bridge Deck Construction at Portal AD3 by Crane (12 nos)	6	6	10-Nov-16	16-Nov-16	4
ED-1010A	Erection of Segment AD1U0	27	27	10-Nov-16	10-Dec-16	4
ED-1010B	Bridge Deck Construction at Abutment AD1 (End-span) by Falsework & Crane (13 nos)	22	22	20-Dec-16	17-Jan-17	4
ED-1080	Bridge Deck Construction at Portal (AD8/AC11) by Crane (14 nos)	8	8	09-Jan-17	17-Jan-17	0
ED-1140A	Erection of Segment AD14U0	40	40	20-Jan-17	14-Mar-17	15
ED-1120	Bridge Deck Construction at Pier AD12 by Special Lifting Frame (50 nos in which 21 nos above MTR Railway)	79	79	11-Jan-17	24-Apr-17	-6
Major Works on Deck Surfaces						
Permanent Pre-stressing and Parapet Installation						
C-3200	Permanent Prestressing for Bridge C2 (AC5-AC12)	15	15	15-Dec-16	04-Jan-17	96
C-1300	Permanent Prestressing for Bridge A3 (AA9-AA13)	15	15	03-Jan-17	19-Jan-17	113
C-4100	Permanent Prestressing for Bridge D1 (AD1-AD5)	15	15	18-Jan-17	10-Feb-17	101
C-4200	Permanent Prestressing for Bridge D2 (AD5-AD8)	15	15	18-Jan-17	10-Feb-17	101
C-3210	Parapet Installation for Bridge C2 (AC5-AC12)	63	63	05-Jan-17	25-Mar-17	255
C-1310	Parapet Installation for Bridge A3 (AA9-AA13)	51	51	20-Jan-17	27-Mar-17	254
Section VI - Works in Portion FH9 (KD-6A)						
Major Works						
S6-2000*	Construction of Abutment AB12/AD14 (including Piling, Pile Cap & Abutment construction)	276	75	06-Feb-15 A	19-Jan-17	0



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

Actual Work
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CEDD Contract No. CV/2012/09

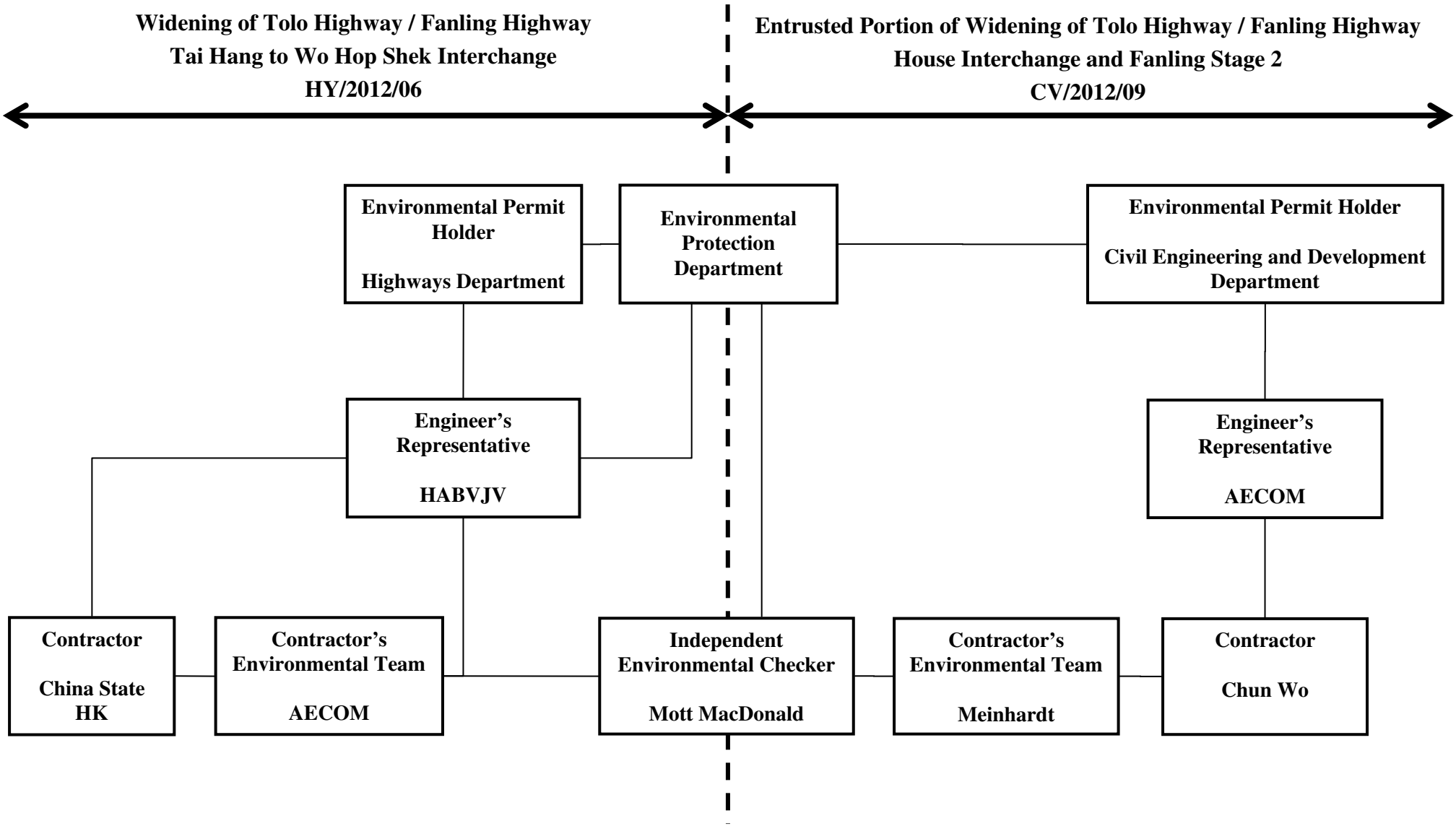
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

3-Month Rolling Programme

3-Month Rolling Programme updated to 2016-10-21

Date	Revision	Checked	Approved
20-Oct-16	Rev.1	SL	

Appendix B
Project Organization Structure


Widening of Tolo Highway / Fanling Highway
Tai Hang to Wo Hop Shek Interchange
HY/2012/06
Entrusted Portion of Widening of Tolo Highway / Fanling Highway
House Interchange and Fanling Stage 2
CV/2012/09
Environmental Permit Holder
Highways Department
Environmental Protection Department
Environmental Permit Holder
Civil Engineering and Development Department
Engineer's Representative
HABVJV
Engineer's Representative
AECOM
Contractor
China State HK
Contractor's Environmental Team
AECOM
Independent Environmental Checker
Mott MacDonald
Contractor's Environmental Team
Meinhardt
Contractor
Chun Wo

Appendix C
Calibration Certificates of Monitoring Equipment

TISCH Environmental

TISCH ENVIRONMENTAL, INC.
145 SOUTH MIAMI AVE
VILLAGE OF CLEVES, OH
45002
513.467.9000
877.263.7610 TOLL FREE
513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Mar 14, 2016 Rootsmeter S/N 0438320 Ta (K) - 295
Operator Tisch Orifice I.D. - 1612 Pa (mm) - 745.49

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3770	3.2	2.00
2	NA	NA	1.00	0.9710	6.4	4.00
3	NA	NA	1.00	0.8710	7.8	5.00
4	NA	NA	1.00	0.8310	8.7	5.50
5	NA	NA	1.00	0.6860	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)
0.9866	0.7165	1.4078
0.9824	1.0117	1.9909
0.9804	1.1256	2.2259
0.9793	1.1785	2.3345
0.9741	1.4200	2.8155

Qstd slope (m) = 2.00411
intercept (b) = -0.03059
coefficient (r) = 0.99995

y axis = SQRT[H2O(Pa/760)(298/Ta)]

Va	(x axis) Qa	(y axis)
0.9957	0.7231	0.8896
0.9914	1.0210	1.2581
0.9894	1.1360	1.4066
0.9883	1.1893	1.4753
0.9830	1.4330	1.7792

Qa slope (m) = 1.25494
intercept (b) = -0.01933
coefficient (r) = 0.99995

y axis = SQRT[H2O(Ta/Pa)]

CALCULATIONS

Vstd = Diff. Vol[(Pa-Diff. Hg)/760](298/Ta)
Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m{[SQRT(H2O(Pa/760)(298/Ta))]- b}
Qa = 1/m{[SQRT H2O(Ta/Pa)]- b}

TSP Sampler Calibration

SITE

Location: Lian Tang 3 — Date: September 5, 2016
Sampler: TE-5170 MFC (Serial # : 2359) — Tech: Sam Wong

CONDITIONS

Barometric Pressure (in Hg):	39.60	Corrected Pressure (mm Hg):	1006
Temperature (deg F):	84	Temperature (deg K):	302
Average Press. (in Hg):	39.60	Corrected Average (mm Hg):	1006
Average Temp. (deg F):	84	Average Temp. (deg K):	302

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.00411
Model:	TE-5025A	Qstd Intercept:	-0.03059
Serial#:	1612	Date Certified:	March 14, 2016

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)
1	12.00	1.991	58.0	66.29
2	10.00	1.819	54.0	61.72
3	8.20	1.648	48.0	54.86
4	5.20	1.316	38.0	43.43
5	3.20	1.035	30.0	34.29

LINEAR REGRESSION

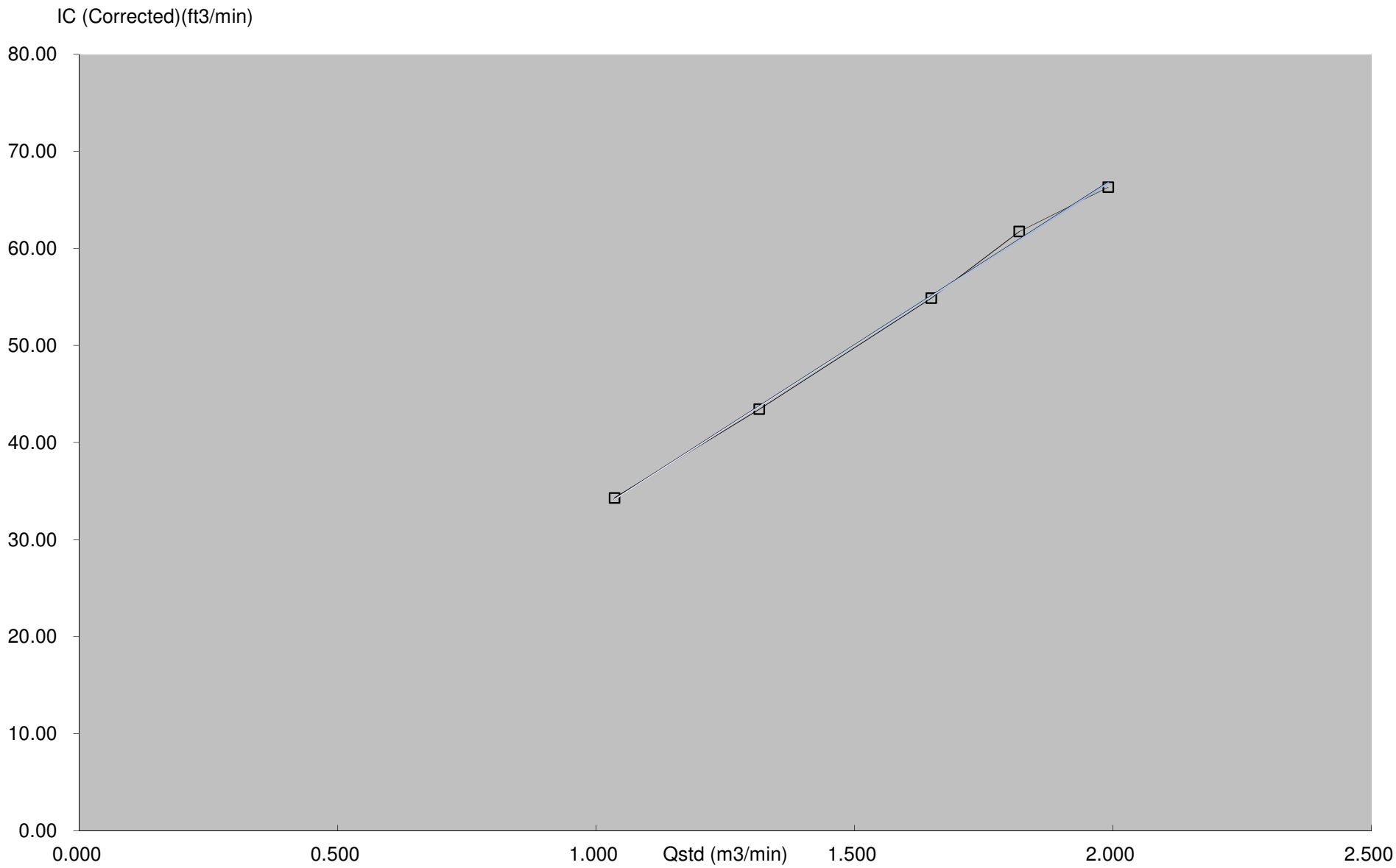
Slope =	34.1197
Intercept =	-1.1706
Corr. coeff.=	0.9992
# of Observations:	5

Calculations

Qstd = 1/m[Sqrt(H2O(Pa/Pstd)(Tstd/Ta))-b]
IC = I[Sqrt(Pa/Pstd)(Tstd/Ta)]

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m = sampler slope
b = sampler intercept
I = chart response
Tav = daily average temperature
Pav = daily average pressure


IC (Corrected)(ft3/min)
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.000
0.500
1.000
Qstd (m3/min)
1.500
2.000
2.500

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. 607984 Page 1 of 2 Pages

Customer : Enovative Environmental Service Limited

Address : Flat 6, 3/F, Block E, Wah Lok Industrial Centre, 31-35 Shan Mei Street, Shatin, N.T., Hong Kong.

Order No. : Q63261 **Date of receipt :** 6-Sep-16

Item Tested

Description : Sound Level Calibrator
Manufacturer : Rion **I.D.** : 2159O1
Model : NC-74 **Serial No.** : 34857296

Test Conditions

Date of Test : 23-Sep-16 **Supply Voltage** : --
Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.
Ref. Document/Procedure : F21, Z02, IEC 60942.

Test Results

All results were within the IEC 60942 Class 1 specification.
The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S014	Spectrum Analyzer	605758	NIM-PRC & SCL-HKSAR
S240	Sound Level Calibrator	601604	NIM-PRC & SCL-HKSAR
S041	Universal Counter	607883	SCL-HKSAR
S206	Sound Level Meter	605757	SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI), or by reference to a natural constant.
The test results apply to the above Unit-Under-Test only

Calibrated by : Kin Wong **Approved by :** Alan Chu

Date: 23-Sep-16

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

Calibration Certificate

Results :

1. **Generated Sound Pressure Level**

UUT Nominal Value (dB)	Measured Value (dB)	IEC 60942 Class 1 Spec.
94	94.1	± 0.4 dB

Uncertainty : ± 0.1 dB

2. **Short-term Level Fluctuation** : 0.0 dB
IEC 60942 Class 1 Spec. : ± 0.1 dB
Uncertainty : ± 0.01 dB

3. **Frequency**

UUT Nominal Value (kHz)	Measured Value (kHz)	IEC 60942 Class 1 Spec.
1	1.002 1	± 1 %

Uncertainty : $\pm 3.6 \times 10^{-6}$

4. **Total Distortion** : < 1.3 %
IEC 60942 Class 1 Spec. : < 3 %
Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1018 hPa.

---------- END ----------

Hong Kong Calibration Ltd.
香港校正有限公司

Calibration Certificate

Certificate No. 508784 Page 1 of 3 Pages

Customer : Enovative Environmental Service Limited

Address : Flat 6, 3/F, Block E, Wah Lok Industrial Centre, 31-35 Shan Mei Street, Shatin, N.T., Hong Kong.

Order No. : Q53442 **Date of receipt :** 8-Oct-15

Item Tested

Description : Sound Level Meter
Manufacturer : B&K
Model : 2238 **Serial No. :** 2694908

Test Conditions

Date of Test : 15-Oct-15 **Supply Voltage :** --
Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.
Ref. Document/Procedure: Z01, IEC 651 and IEC 804.

Test Results

All results were within the IEC 651 Type1 and IEC 804 Type1 specification after adjustment.
The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S017	Multi-Function Generator	C147450	SCL-HKSAR
S240	Sound Level Calibrator	500563	NIM-PRC & SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).
The test results apply to the above Unit-Under-Test only

Calibrated by : Alan Chu

Approved by : Steve Kwan

Date: 15-Oct-15

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street,Kwai Chung, NT,Hong Kong.
Tel: 2425 8801 Fax: 2425 8646

EO

Calibration Certificate

Results :

1. SPL Accuracy

UUT Setting				Applied Value (dB)	UUT Reading (dB)	
Range	Freq. Wgt.	Bandwith	Center Freq.		Before adjust	After adjust
20 ~ 100	A	BB/F	--	94.0	*91.6	93.8
	A	BB/S	--		--	93.8
	C	BB/F	--		--	93.8
40 ~ 120	A	BB/F	--	94.0	--	93.9
	A	BB/F	--	114.0	--	113.8

IEC 651 Type 1 Spec. : ± 0.7 dB
Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB
Uncertainty : ± 0.1 dB

3. Linearity

3.1 Level Linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec. (Primary Indicator Range)
140	114.0	113.9	0.0	± 0.7 dB
130	104.0	103.9	0.0	
120	94.0	93.9 (Ref.)	- -	
110	84.0	83.9	0.0	
100	74.0	73.9	0.0	
90	64.0	63.9	0.0	
80	54.0	53.8	-0.1	

Uncertainty : ± 0.1 dB

3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	84.0	+ 0.1	± 0.4 dB
	94.0	93.9 (Ref.)	- -	
	95.0	94.9	0.0	± 0.2 dB

Uncertainty : ± 0.1 dB

Calibration Certificate

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	- 39.3	- 39.4 dB, ± 1.5 dB
63 Hz	- 26.2	- 26.2 dB, ± 1.5 dB
125 Hz	- 16.2	- 16.1 dB, ± 1 dB
250 Hz	- 8.7	- 8.6 dB, ± 1 dB
500 Hz	- 3.2	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref)	0 dB, ± 1 dB
2 kHz	+ 1.2	+ 1.2 dB, ± 1 dB
4 kHz	+ 1.0	+ 1.0 dB, ± 1 dB
8 kHz	- 1.2	- 1.1 dB, + 1.5 dB ~ -3 dB
16 kHz	- 6.7	- 6.6 dB, + 3 dB ~ - ∞

Uncertainty : ± 0.1 dB

5. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40.0	--
1/10	40.0	39.9	± 0.5 dB
$1/10^2$	40.0	39.9	
$1/10^3$	40.0	39.9	± 1.0 dB
$1/10^4$	40.0	39.8	

Uncertainty : ± 0.1 dB

Remarks:
1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1008 hPa
4. The UUT was adjusted with the laboratory's sound calibrator at the reference sound pressure level before the calibration.
5. * Out of specification.

---------- END ----------

Appendix D
EM&A Monitoring Schedules

Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2
Impact Monitoring & Site Auditing Schedule for October 2016

October 2016						
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
						1 National Day
2	3 ET Site Walk(09:30am – 11:00am)	4	5	6 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	7	8
9	10 The day following Chung Yeung Festival	11 ET Site Walk(02:30pm – 04:00pm)	12 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	13	14	15
16	17	18 24-hour TSP + 3 x 1-hour TSP	19 ET Site Walk(09:30 am – 11:00 am) with Liantang Project-wide ET and IEC + SSEMC	20 Noise (SR77) Note 1	21	22
23	24 ET Site Walk(09:30am – 11:00am) 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	25	26	27	28	29 24-hour TSP + 3 x 1-hour TSP (SR77)
30	31 ET Site Walk(09:30am – 11:00am) with Fanling Stage 2 IEC & Liantang Project-wide ET and IEC					

Note:

(1) Noise measurement was taken on 20th instead of 18th due to weather condition.

Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2
Impact Monitoring & Site Auditing Schedule for November 2016

November 2016						
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
		1	2	3	4 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	5
6	7 ET Site Walk(09:30am – 11:00am)	8	9	10 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	11	12
13	14	15	16 24-hour TSP + 3 x 1-hour TSP, Noise (SR77) ET Site Walk(09:30 am – 11:00 am) with Liantang Project-wide ET and IEC + SSEMC (To be confirmed)	17	18	19
20	21 ET Site Walk(09:30am – 11:00am)	22 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	23	24	25	26
27	28 ET Site Walk(09:30am – 11:00am) with Fanling Stage 2 IEC & Liantang Project-wide ET and IEC 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	29	30			

Appendix E
Meteorological Data Extracted from Hong Kong Observatory

Daily Extract of Meteorological Observations , October 2016

Day	Hong Kong Observatory								King's Park	Waglan Island^	
	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)	Total Bright Sunshine (hours)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)							
01	1009.9	29.4	26.6	24.0	24.6	89	75	95.5	5.8	***	***
02	1009.0	29.8	27.6	26.2	24.3	82	76	Trace	3.0	***	***
03	1007.8	28.3	27.5	26.6	24.1	82	84	0.2	1.2	***	***
04	1008.1	29.5	27.5	26.5	24.4	83	60	0.0	4.9	***	***
05	1008.9	31.9	28.6	26.9	24.3	78	68	Trace	5.7	***	***
06	1009.1	32.4	28.5	25.9	23.5	75	57	16.7	8.9	***	***
07	1007.1	29.3	27.7	25.5	23.5	79	86	17.3	3.8	***	***
08	1006.8	29.9	28.1	27.0	22.4	71	88	Trace	2.1	***	***
09	1008.9	28.8	26.5	24.9	20.4	69	86	0.0	4.7	***	***
10	1010.2	28.1	25.3	23.5	19.4	70	74	0.0	6.8	***	***
11	1010.7	26.8	24.5	22.0	20.6	79	88	0.1	0.7	***	***
12	1012.5	25.8	24.6	23.0	21.6	84	88	0.9	0.1	***	***
13	1013.5	29.3	26.0	24.2	21.6	77	72	Trace	6.5	***	***
14	1013.2	29.9	26.7	25.0	21.9	76	70	Trace	9.0	***	***
15	1012.6	30.3	27.2	24.6	21.6	72	63	0.0	7.0	***	***
16	1010.9	30.8	28.0	25.9	22.1	71	62	0.0	7.8	***	***
17	1009.1	28.8	26.6	24.1	22.9	81	89	16.7	2.2	***	***
18	1008.1	25.5	24.8	23.9	24.2	96	91	178.7	0.0	***	***
19	1008.7	25.9	25.1	24.4	24.6	96	94	223.4	0.1	***	***
20	1004.6	29.5	27.3	24.7	23.8	82	82	0.0	7.4	***	***
21	997.1	28.0	26.1	24.4	23.6	86	96	72.5	0.0	***	***
22	1007.8	29.4	27.5	26.1	24.4	84	77	1.9	5.0	***	***
23	1010.0	29.1	27.1	25.8	24.9	88	68	0.0	2.8	***	***
24	1011.3	29.1	27.3	26.1	25.2	88	74	Trace	4.1	***	***
25	1013.3	29.8	27.3	26.1	24.8	87	65	Trace	9.2	***	***
26	1015.6	30.0	27.1	25.7	24.2	84	47	0.0	8.5	***	***
27	1016.0	30.9	27.5	25.4	23.5	79	41	0.0	9.8	***	***
28	1014.9	31.5	28.2	26.3	23.3	75	54	0.0	10.3	***	***
29	1017.2	29.0	26.7	24.3	22.7	79	70	0.5	3.7	***	***
30	1019.8	26.6	24.4	22.9	19.4	74	85	0.0	3.6	***	***
31	1019.1	28.7	25.5	23.1	19.7	70	66	0.0	7.9	***	***
Mean/Total	1010.7	29.1	26.8	25.0	22.9	80	74	624.4	152.6	***	***
Normal§	1014.1	27.8	25.5	23.7	20.2	73	58	100.9	193.9	080	27.4

*** unavailable

^ Information of wind direction and wind speed for Waglan Island are based on automatic weather station data since January 1989

Trace means rainfall less than 0.05 mm

§ 1981-2010 Climatological Normal, unless otherwise specified

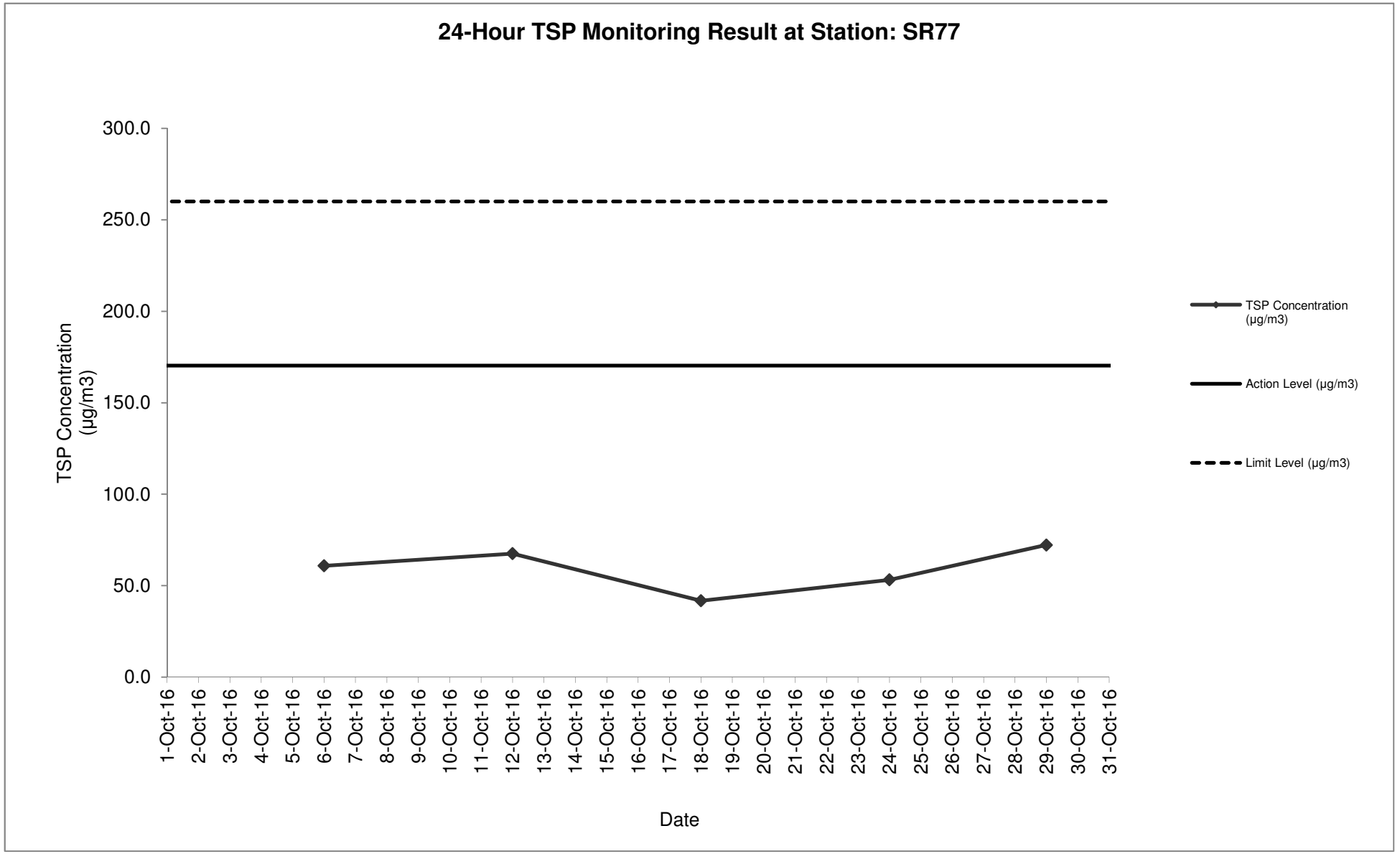
Appendix F
Air Quality Monitoring Results and their Graphical Presentation

Appendix F
Air Quality Monitoring Results and their Graphical Presentation

24-Hour TSP Monitoring Result at Station: SR77

Sampling Date	Weather Condition	Starting Time	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 ($\mu g/m3$)	Limit Level ($\mu g/m3$)	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						
6-Oct-16	Fine	12:11	240	2.8401	2.9667	0.1266	5413.67	5437.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	60.9	170.3	260.0	<5	N
12-Oct-16	Sunny	12:10	242	2.8534	2.9939	0.1405	5440.67	5464.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	67.6	170.3	260.0	<5	N
18-Oct-16	Rainy	12:10	244	2.9016	2.9885	0.0869	5467.67	5491.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	41.8	170.3	260.0	<5	N
24-Oct-16	Sunny	12:09	246	2.8571	2.9678	0.1107	5494.67	5518.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	53.2	170.3	260.0	<5	N
29-Oct-16	Fine	12:12	248	2.89	3.0403	0.1503	5521.67	5545.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	72.3	170.3	260.0	<5	N
																Average	59.1				
																Min	41.8				
																Max	72.3				

Note: No major dust source observed during the monitoring period


24-Hour TSP Monitoring Result at Station: SR77
TSP Concentration (µg/m3)
300.0
250.0
200.0
150.0
100.0
50.0
0.0
1-Oct-16
2-Oct-16
3-Oct-16
4-Oct-16
5-Oct-16
6-Oct-16
7-Oct-16
8-Oct-16
9-Oct-16
10-Oct-16
11-Oct-16
12-Oct-16
13-Oct-16
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17-Oct-16
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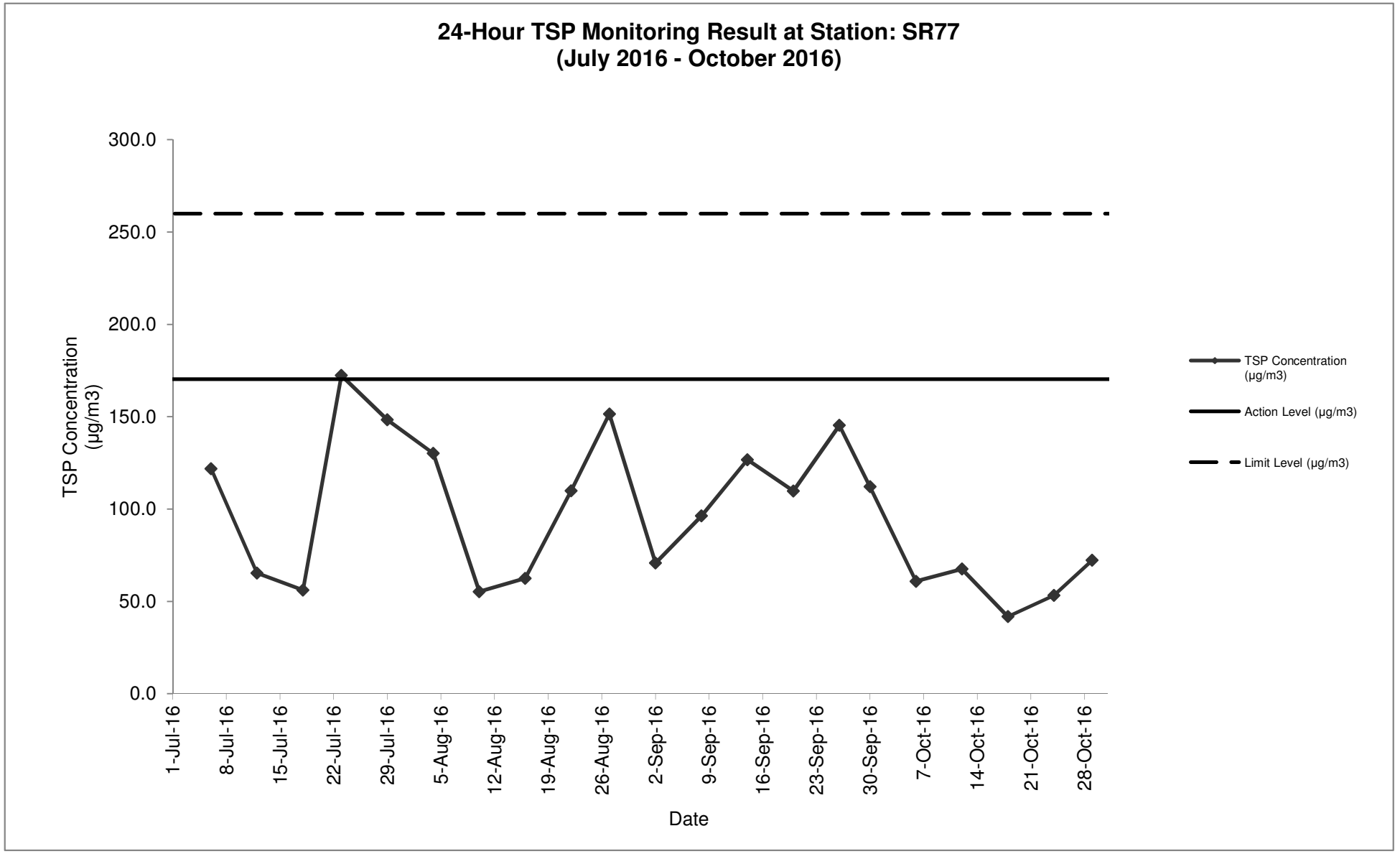
21-Oct-16
22-Oct-16
23-Oct-16
24-Oct-16
25-Oct-16
26-Oct-16
27-Oct-16
28-Oct-16
29-Oct-16
30-Oct-16
31-Oct-16
Date
TSP Concentration (µg/m3)
Action Level (µg/m3)
Limit Level (µg/m3)

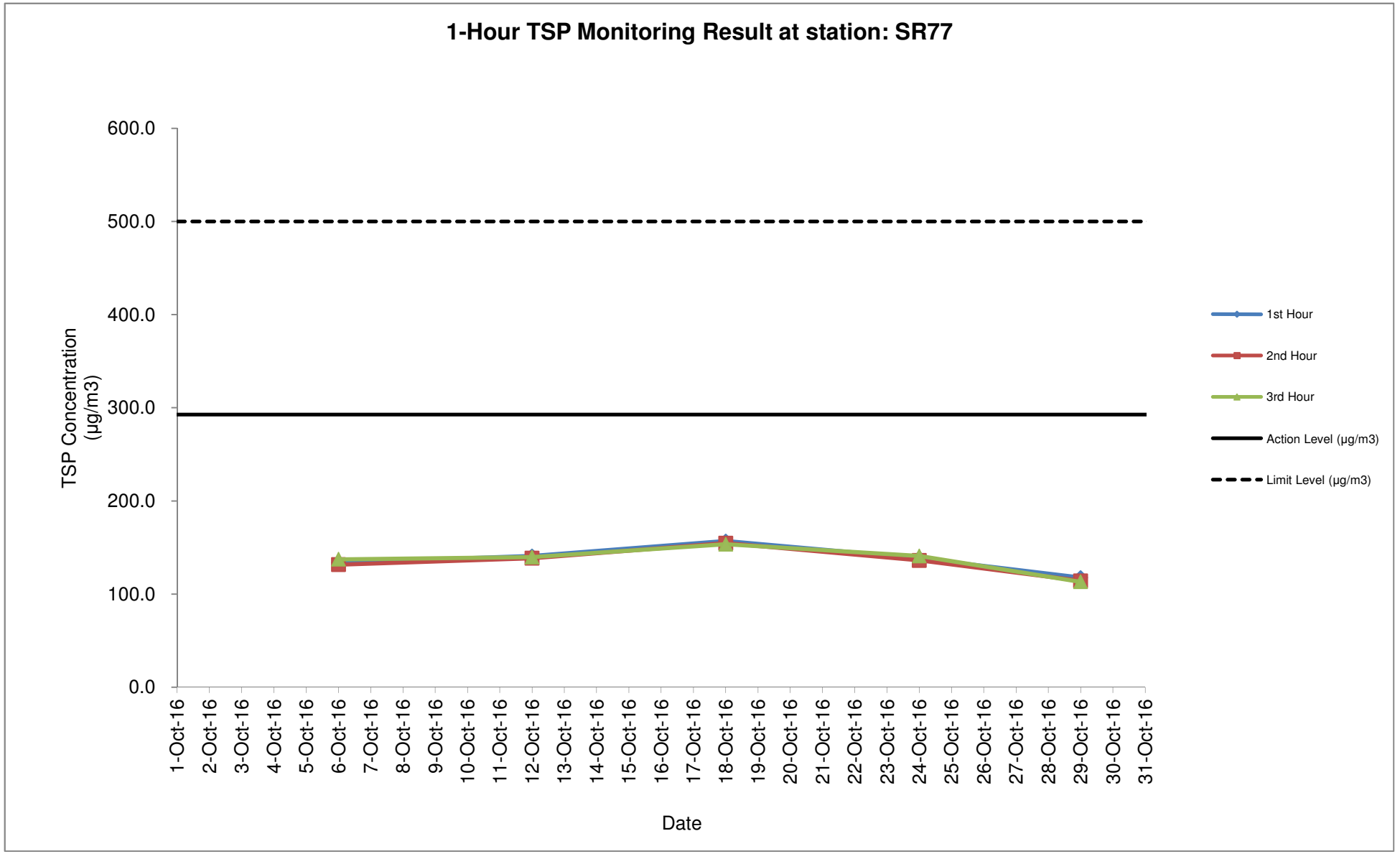

24-Hour TSP Monitoring Result at Station: SR77
(July 2016 - October 2016)
300.0
250.0
200.0
150.0
100.0
50.0
0.0
TSP Concentration (µg/m3)
1-Jul-16
8-Jul-16
15-Jul-16
22-Jul-16
29-Jul-16
5-Aug-16
12-Aug-16
19-Aug-16
26-Aug-16
2-Sep-16
9-Sep-16
16-Sep-16
23-Sep-16
30-Sep-16
7-Oct-16
14-Oct-16
21-Oct-16
28-Oct-16
Date
TSP Concentration (µg/m3)
Action Level (µg/m3)
Limit Level (µg/m3)

Appendix F
Air Quality Monitoring Results and their Graphical Presentation

Detailed Calculation of 1-Hour TSP Monitoring Result at Station: SR77

Sampling Date	Weather Condition	Starting Time	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 ($\mu g/m3$)	Limit Level ($\mu g/m3$)	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						
6-Oct-16	Fine	09:00	239A	2.8532	2.8648	0.0116	5410.67	5411.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	133.9	292.7	500.0	<5	N
	Fine	10:03	239B	2.8417	2.8531	0.0114	5411.67	5412.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	131.6	292.7	500.0	<5	N
	Fine	11:07	239C	2.8297	2.8416	0.0119	5412.67	5413.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	137.3	292.7	500.0	<5	N
12-Oct-16	Sunny	09:00	241A	2.8400	2.8522	0.0122	5437.67	5438.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	140.8	292.7	500.0	<5	N
	Sunny	10:03	241B	2.8381	2.8501	0.0120	5438.67	5439.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	138.5	292.7	500.0	<5	N
	Sunny	11:06	241C	2.8279	2.8400	0.0121	5439.67	5440.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	139.6	292.7	500.0	<5	N
18-Oct-16	Rainy	09:00	243A	2.8648	2.8784	0.0136	5464.67	5465.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	157.0	292.7	500.0	<5	N
	Rainy	10:02	243B	2.8427	2.8561	0.0134	5465.67	5466.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	154.6	292.7	500.0	<5	N
	Rainy	11:07	243C	2.8369	2.8502	0.0133	5466.67	5467.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	153.5	292.7	500.0	<5	N
24-Oct-16	Sunny	09:00	245A	2.8689	2.8809	0.0120	5491.67	5492.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	138.5	292.7	500.0	<5	N
	Sunny	10:04	245B	2.8540	2.8658	0.0118	5492.67	5493.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	136.2	292.7	500.0	<5	N
	Sunny	11:06	245C	2.8399	2.8521	0.0122	5493.67	5494.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	140.8	292.7	500.0	<5	N
29-Oct-16	Fine	09:00	247A	2.889	2.8992	0.0102	5518.67	5519.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	117.7	292.7	500.0	<5	N
	Fine	10:03	247B	2.8322	2.8421	0.0099	5519.67	5520.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	114.3	292.7	500.0	<5	N
	Fine	11:06	247C	2.8417	2.8515	0.0098	5520.67	5521.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	113.1	292.7	500.0	<5	N
																Average	136.5				
																Min	113.1				
																Max	157.0				

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


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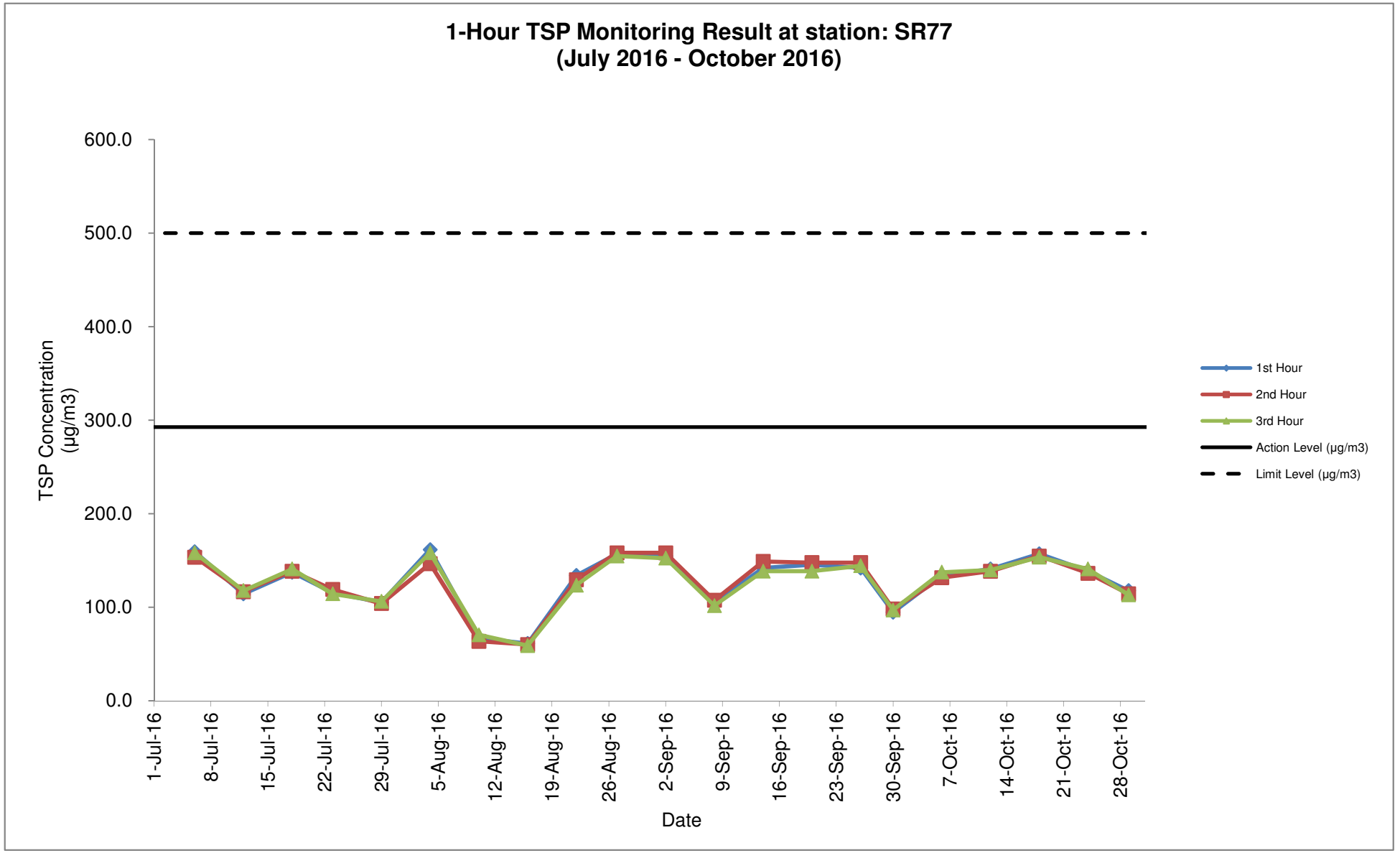
30-Oct-16
31-Oct-16
Date
1st Hour
2nd Hour
3rd Hour
Action Level (µg/m3)
Limit Level (µg/m3)


1-Hour TSP Monitoring Result at station: SR77
(July 2016 - October 2016)
TSP Concentration (µg/m3)
600.0
500.0
400.0
300.0
200.0
100.0
0.0
1-Jul-16
8-Jul-16
15-Jul-16
22-Jul-16
29-Jul-16
5-Aug-16
12-Aug-16
19-Aug-16
26-Aug-16
2-Sep-16
9-Sep-16
16-Sep-16
23-Sep-16
30-Sep-16
7-Oct-16
14-Oct-16
21-Oct-16
28-Oct-16
Date
1st Hour
2nd Hour
3rd Hour
Action Level (µg/m3)
Limit Level (µg/m3)

Appendix G
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 H
Noise Monitoring Results and their Graphical Presentation

Appendix H
Noise Monitoring Results and their Graphical Presentation

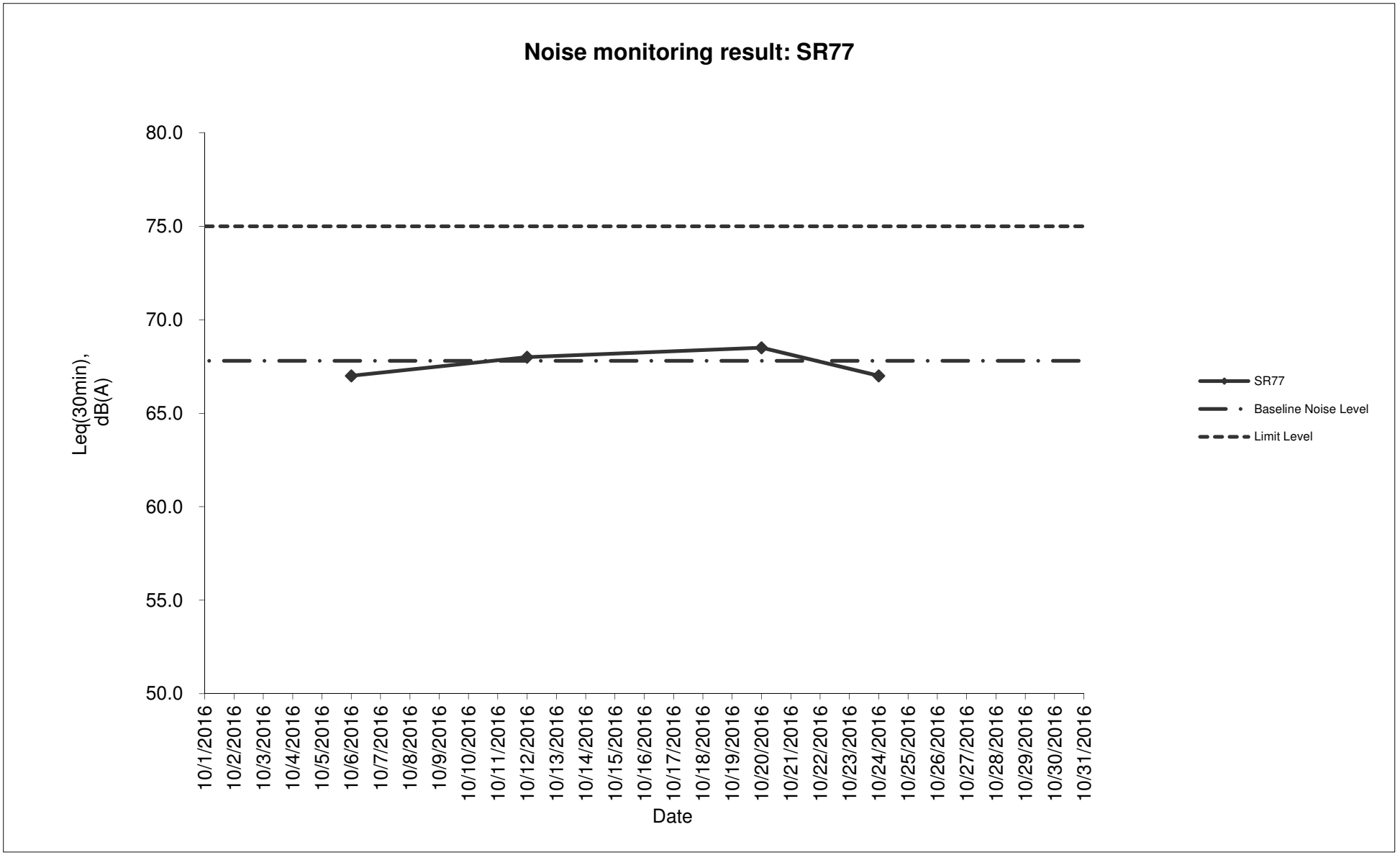
Noise Monitoring Result at SR77

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)				
2016/10/06	Fine	13:30	14:00	85.0	63.0	67.0	-	67.8	75.0	N
2016/10/12	Sunny	11:30	12:00	91.0	63.0	68.0	-	67.8	75.0	N
2016/10/20	Fine	10:30	11:00	86.5	62.0	68.5	-	67.8	75.0	N
2016/10/24	Sunny	11:30	12:00	88.0	62.5	67.0	-	67.8	75.0	N
					Average	67.6				
					Minimum	67.0				
					Maximum	68.5				

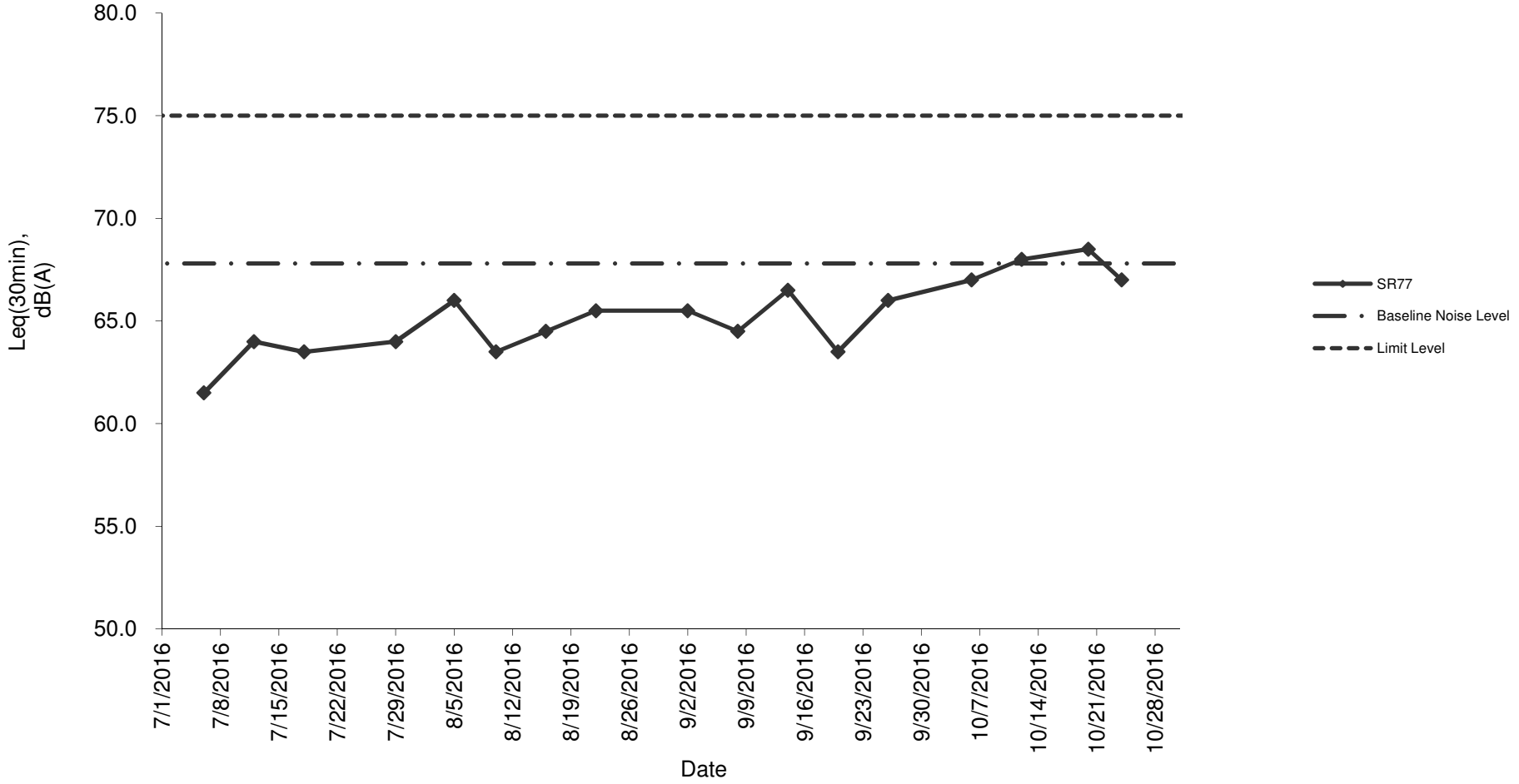
Remarks

* +3dB(A) Façade effect correction included

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


Noise monitoring result: SR77
80.0
75.0
70.0
65.0
60.0
55.0
50.0
Leq(30min), dB(A)
10/1/2016
10/2/2016
10/3/2016
10/4/2016
10/5/2016
10/6/2016
10/7/2016
10/8/2016
10/9/2016
10/10/2016
10/11/2016
10/12/2016
10/13/2016
10/14/2016
10/15/2016
10/16/2016
10/17/2016
10/18/2016
10/19/2016
10/20/2016
10/21/2016
10/22/2016
10/23/2016
10/24/2016
10/25/2016
10/26/2016
10/27/2016
10/28/2016
10/29/2016
10/30/2016
10/31/2016
Date
SR77
Baseline Noise Level
Limit Level

Noise monitoring result: SR77
(July 2016 - October 2016)



Appendix K
Waste Flow Table

Monthly Summary Waste Flow Table

	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of C&D Wastes Generated Monthly				
Month	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)
Jan-16	2.683	0.253	2.430	0.030	-	2.400	0.799	0.001	-	-	-	0.115
Feb-16	1.876	0.651	1.225	0.020	-	1.205	1.141	-	-	-	-	0.110
Mar-16	1.501	0.417	1.084	-	-	1.084	0.831	-	-	0.001	-	0.090
Apr-16	0.472	0.046	0.426	0.018	-	0.408	0.647	-	-	-	-	0.135
May-16	0.488	0.013	0.475	-	-	0.475	2.479	-	-	-	-	0.105
Jun-16	0.523	0.103	0.420	-	-	0.420	0.716	-	-	0.001	-	0.135
Sub-Total	7.543	1.483	6.060	0.068	-	5.992	6.613	0.001	-	0.002	-	0.690
Jul-16	0.565	0.019	0.546	-	-	0.546	1.407	-	0.001	0.004	1.000	0.085
Aug-16	0.582	0.088	0.494	-	-	0.494	0.715	-	-	0.001	-	0.105
Sep-16	1.797	0.604	1.193	0.258	-	0.935	0.038	0.001	-	0.002	-	0.090
Oct-16	1.115	0.485	0.630	0.177	-	0.453	0.395	-	-	0.002	0.800	0.120
Nov-16	-		-		-							
Dec-16	-		-									
Total	11.602	2.679	8.923	0.503	-	8.420	9.168	0.002	0.001	0.011	1.800	1.090

Note:

1. Assume the density of soil fill is 2 ton/m^3.
2. Assume the density of rock and broken concrete is 2.5 ton/m^3.
3. Assume each truck of C&D wastes is 5m^3.
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/m^3.

Appendix L
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	✓ ✓ ✓ ✓ ✓ ✓ ✓ 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	✓

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

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status [#]
	● Sand traps, oil interceptors and other pollution prevention installations should be provided, properly cleaned and maintained.			✓
	● 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.	During Construction	Contractor	✓
	● 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.	During Construction	Contractor	✓
	● Mulching to reduce bulk and where possible review opportunities for the possible beneficial use within landscaping areas.			✓

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

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status [#]
	<u>Demolition Wastes</u>			
	● Segregation of materials to facilitate disposal.	During Construction	Contractor	✓
	● Appropriate stockpile management.			✓
	<u>Excavated Materials</u>			
	● Segregation of materials to facilitate disposal / reuse.	During Construction	Contractor	✓
	● Appropriate stockpile management.			✓
	● Re-use of excavated material on or off site (where possible).			✓
	● Special handling and disposal procedures in the event that contaminated materials are excavated.			N/A
	<u>Construction Wastes</u>			
	● Segregation of materials to facilitate recycling/reuse (within designated area in appropriate containers/stockpiles).	During Construction	Contractor	✓
	● 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.			✓
	<u>Bentonite Slurries</u>			
	● Bentonite slurries should be reused as far as possible.	During Construction	Contractor	N/A
	● Disposal in accordance with Practice Note For Professional Persons ProPECC PN 1/94.			N/A
	<u>Chemical Wastes</u>			
	● Storage within locked, covered and bunded area.	During Construction	Contractor	✓
	● The storage area shall not be located adjacent to sensitive receivers e.g. drains.			✓
	● Minimise waste production and recycle oils/solvents where possible.			✓

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

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status [#]
	● A spill response procedure shall be in place and absorption material available for minor spillages.	During Construction	Contractor	Obs
	● Use appropriate and labelled containers.			✓
	● Educate site workers on site cleanliness/waste management procedures.			✓
	● 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.			✓
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.	During Construction	Contractor	✓
	● 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	Contractor	✓

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

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status [#]
	● 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. <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	✓ ✓

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

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status [#]
	<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	✓
	<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.	During Construction	Contractor	✓
	<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.	During Construction	Contractor	N/A
	<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	Contractor	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 N
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	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.	

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