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

Monthly EM&A Report
January 2019

Submitted to

Environmental Protection Department

Prepared By

Meinhardt Infrastructure and Environment Ltd

Meinhardt Infrastructure and Environment Limited

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

Monthly EM&A Report

(January 2019)

Certified by: Fredrick Leong

Position: Environmental Team Leader

Date: 11 February 2019

MOTT MACDONALD

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

Your Reference

Our Reference
JFP/EC/ST/cy/T329380/2
2.05/L-0249

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

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

Environmental Monitoring and Audit (EM&A) for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Stage 2 (between Tai Hang to Wo Hop Shek Interchange) – Entrusted Works Environmental Permit No. EP-324/2008/E Condition 3.3 – Submission of Monthly EM&A Report – January 2019 for the portion of Stage 2 works entrusted to Civil Engineering and Development Department (CEDD) under Contract No. CV/2012/09

11 February 2019
By Fax (2805 5028) & Hand

We refer to the revised Monthly EM&A Report – January 2019 received on 08 February 2019 submitted by the Environmental Team via email. Pursuant to Environmental Permit Condition 3.3, I hereby verify the Monthly EM&A Report – January 2018 (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.

HyD	Mr. Chung Lok Chin	By Fax (2714 5198)
CEDD/BCP	Mr. Lu Pei Yu	By Fax (3547 1659)
AECOM	Mr. Alan Lee	By Fax (3922 9797)
Meinhardt	Mr. Fredrick Leong	By Fax (2559 1613)

Date	Revision	Prepared By	Checked By	Approved By
11 Feb 2019	0	WK CHIU BoBo HU	Fredrick LEONG	Helen COCHRANE

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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 January 2019. As informed by the Contractor, the major activities in the reporting month were:

- Road Pavement Works;
- Water Main Laying Works;
- Road Drainage Works;
- Construction of Police Observation Platform on the Northbound Fanling Highway; and
- Remaining Works of Kiu Tau Footbridge.

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

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

- Road pavement works;
- Water main laying works;
- Road Drainage Works;
- Construction of Police Observation Platform on the Northbound Fanling Highway; and
- Remaining works of Kiu Tau footbridge.

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/E 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 on 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 February 2019.

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 previous VEP (EP-324/2008/D) was granted on 27 August 2015. The current VEP (EP-324/2008/E) was granted on 26 January 2017.

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:

- Road Pavement Works;
- Water Main Laying Works ;
- Road Drainage Works;
- Construction of the Police Observation Platform on the Northbound Fanling Highway; and
- Remaining Works of Kiu Tau Footbridge.

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. Yang Ran	2638 6147	
		Environmental Supervisor	Mr. Franki Leung	2638 7005	
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/E	26 Jan 2017	--	Granted on 26 Jan 2017	
Construction Noise Permit				
GW-RN0388-18	25 Aug 2018	24 Feb 2019	Valid	For general works at the northward of site office
GW-RN0424-18	01 Sep 2018	21 Feb 2019	Valid	Parapet installation works and remedial works on Tai Wo Service Road East, Fanling Highway.
GW-RN0425-18	22 Aug 2018	21 Feb 2019	Valid	For traverse stitch joints and installation of longitudinal stitch panel over Fanling Highway and MTRC's East Rail line.
GW-RN0454-18	06 Sep 2018	05 Mar 2019	Valid	For general works at the southward of site office.
GW-RN0566-18	29 Oct 2018	4 Apr 2019	Valid	For sampling works Fanling Highway bothbound.
GW-RN0693-18	18 Dec 2018	25 May 2019	Valid	For lane shifting work of Fanling Highway bothbound.
GW-RN0694-18	19 Dec 2018	25 May 2019	Valid	For loading and unloading along Fanling Highway both bounds.
GW-RN0696-18	19 Dec 2018	25 May 2019	Valid	For connection of DN600 Watermain near Kau Lung Hang.

Permit / License No. / Notification / Reference No.	Valid Period		Status	Remarks
	From	To		
GW-RN0699-18	18 Dec 2018	25 May 2019	Valid	For road diversion and maintenance of Fanling Highway bothbound.
Wastewater Discharge License				
WT00032188-2018	20 Sep 2018	31 Aug 2023	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 As informed by the contractor, all major construction activities of the Entrusted Portion Project of Section 1A and 1B were substantially completed on 28 September 2018 and 3 October 2018 respectively. In such regard, the EM&A Programme of the captioned project, including monthly EM&A reporting and the corresponding environmental monitoring and audit works, is no longer required and we proposed to cease it by the end of December 2018 and we have submitted the termination proposal to EPD on 24 December 2018. The EM&A monitoring and audit works will be carried until the termination proposal is approved. The tentative 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) *	154.9	96.9-202.0	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) *	68.3	46.9-94.4	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**.

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

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	34678506
Sound Level Meter	Rion (Model No. NL-52)	1	01143484

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)	67.0	64.5 – 70.1	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 had been completed in March 2017. The 4-week post-construction water quality monitoring at I5 was completed in 28 April 2017.

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 2937m^3 of excavated material has been generated. 2010m^3 of inert C&D materials was disposed of at public fill to Tuen Mun Area 38. 0m^3 of inert C&D materials were reused on site. 145m^3 of general refuse was disposed of at North East New Territories (NENT) Landfill. No plastic was collected by recycling contractor in the reporting month. No paper/cardboard packaging was collected by recycling contractor in the reporting month. No metal was collected by recycling contractor in the reporting month. No 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 2, 8, 16, 24 and 28 January 2019. The one held on 28 January 2019 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
Air Quality	N/A	N/A	N/A
Noise	N/A	N/A	N/A
Water Quality	N/A	N/A	N/A
Waste/ Chemical Management	2 Jan 2019	Chemicals were observed without secondary containment at TWSRE. The contactor was advised to provide secondary containment for all chemicals to prevent any potential spillage.	N/A
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 Dec 2018	9 Jan 2019

11 ENVIRONMENTAL NON-CONFORMANCE

11.1 Summary of Monitoring Exceedances

11.1.1 No exceedance of Action and Limit Level were 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.

11.1.4 The 4-week post-construction water quality monitoring at I5 was completed in April 2017.

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

- Road Pavement Works;
- Water Main Laying Works;
- Road Drainage Works;
- Construction of the Police Observation Platform on the Northbound Fanling Highway;and
- Remaining works of Kiu Tau Footbridge.

12.2 Key Issues for the Coming Month

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

- 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;
- Good housekeeping should be maintained and general refuse should be removed regularly; and
- Watering shall be enhanced over the construction site.

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, noise and water quality 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 The 4-week post-construction water quality monitoring at I5 was completed in April 2017.

13.1.7 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.

13.2 Recommendations

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

Waste/ Chemical Management

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

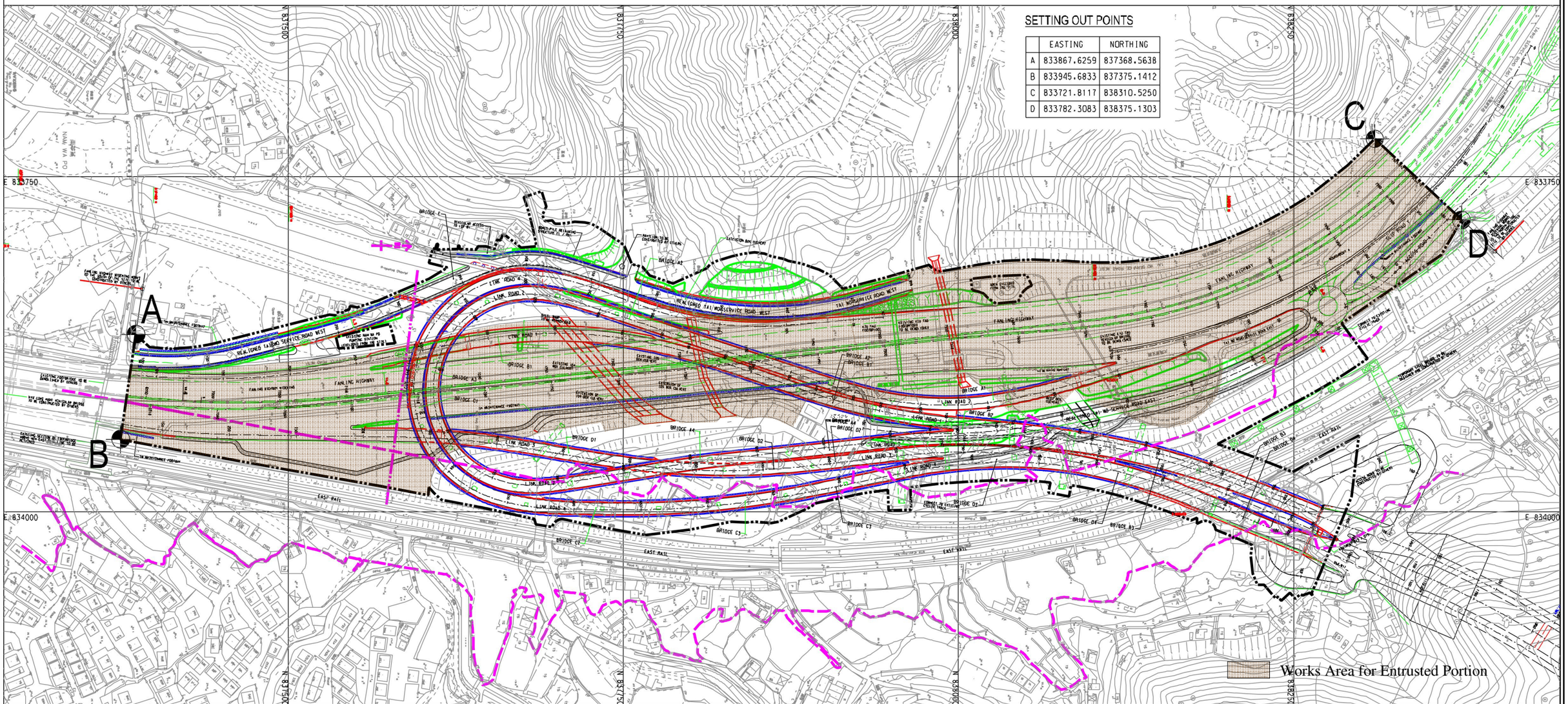
Figure

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

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

SETTING OUT POINTS

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



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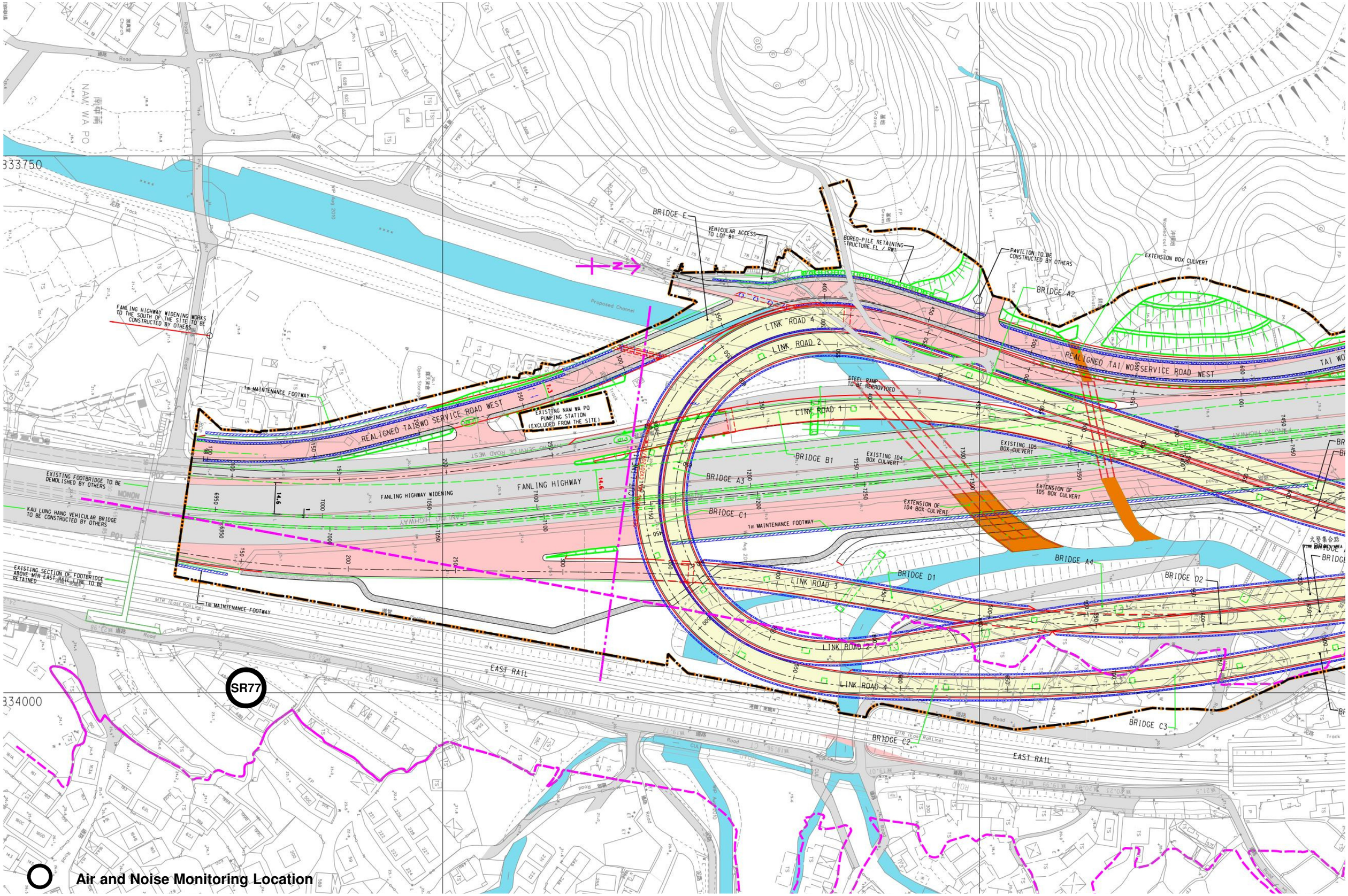
MEINHARDT

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 2018-11-21 (Based on (UMP06C}					
	Key Dates (Contractual)					
KD-0100b	KD1: Section 1A - all HyD's works in Zone3 & SBZ2 excl. Landscape Works (Potential EOT by Claim 63 & Inclement Weather)	0	0		20-Dec-18*	-63
KD-0300a	KD3: Section 2 - the remainder of the Works (Preliminary EOT by Claim No.56 & 58, Inclement Weather)	0	0		22-Oct-18 A	
KD-0400a	KD4: Section 3 - Remainder of Landscape Softworks not included in Section 3A (Prel. EOT by Claim 56, 58)	0	0		20-Dec-18*	-62
KD-0500	KD4A: Section 3A - Landscape Softworks in NBZ1 (Potential EOT by Inclement Weather)	0	0		20-Dec-18*	-62
	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)					
	Noise Barrier					
FHW-1110b	Noise Barrier NB6 and NB7 - Remaining Stem Wall (28m, maintain access for extensioin of NB 70, VO199)	30	34	16-Aug-18 A	31-Jan-19	-88
FHW-1140c	Noise Barrier NB70 - Footing (extended 10m under VO199)	60	60	20-Dec-18*	09-Mar-19	-120
	At-Grade Roadworks (195m)					
FHW-1350b	Road Pavement (FLH NB 1st lane and Hard Shoulder)	14	14	20-Dec-18*	08-Jan-19	-68
	Fanling Highway Zone 2 between CH7130 and CH7290					
	Noise Barrier					
FHW-2340b	Noise Barrier NB67-2 - Cap ID4-1A_1 and Cap ID4-1A_2 head beam (affected by Tau Pass, VO 191)	103	103	31-Dec-18*	14-May-19	-210
FHW-2370c	Access Ramp at Tau Pass - Additional Mini-Piling (3 nos.) (under VO191)	61	61	20-Dec-18*	11-Mar-19	-220
	At-Grade Roadworks (160m)					
FHW-2240	Permanent Street Light Installation (due to Claim No. 63)	21	21	20-Jun-18 A	16-Jan-19	-86
FHW-2250	Road Pavement on FLH SB 4th lane after Removal of Temp. Street Light (due to Claim No. 63)	11	11	17-Jan-19*	29-Jan-19	-86
FHW-2350a	Road Drainage and Pavement (near NB67-2, MN7.9 to MN7.11)	58	33	29-Mar-18 A	30-Jan-19	-87
FHW-2350b	Installation of Drain pipe and Manholes (MN7.12 & MN7.12A) (affected by Tau Pass under VO191)	29	157	26-Nov-18 A	10-Jul-19	-211
	Fanling Highway Zone 3 between CH7290 and CH7380					
	Noise Barrier					
FHW-3340	Noise Barrier NB69 - Pile cap/ Footing and Stem Wall adjacent to NB lane (108m)	77	35	16-Oct-17 A	01-Feb-19	-107
	At-Grade Roadworks (130m)					
FHW-3240	Road Pavement on FLH SB 4th lane after Removal of Temp. Street Light (due to Claim No. 63)	10	10	31-Aug-18 A	03-Jan-19	-64
FHW-3350a	Road Drainage (FLH NB hard shoulder, next to NB69)	61	50	26-Feb-18 A	26-Feb-19	-129
FHW-3350b	Road Formation and Pavement (FLH NB 1st lane and HS next to NB69, due to Tau Pass under VO191)	25	25	27-Feb-19*	27-Mar-19	-129
	Fanling Highway North Portion between CH7470 and CH7925					
	Fanling Highway Zone 4 between CH7380 and CH7470					
	At-Grade Roadworks (90m)					
FHW-4150	Road Pavement (FLH SB 1st lane) by re-surfacing (due to Claim No. 63)	15	33	10-Sep-18 A	30-Jan-19	-87

Actual Work
Remaining Work
Summary Bar
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Milestone
Project Baseline Bar

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Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3
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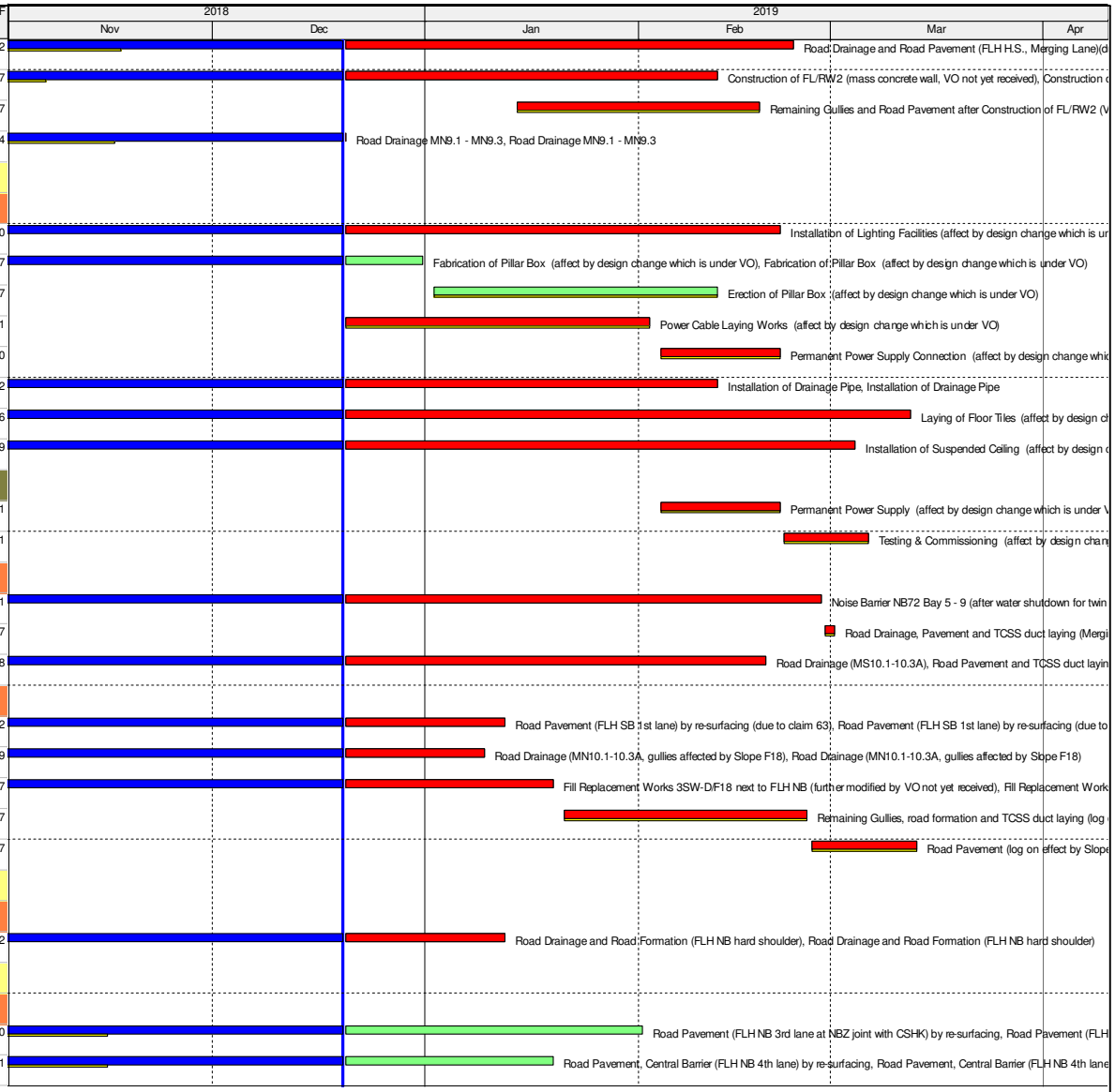
3-Month Rolling Programme updated to 2018-12-20

Date	Revision	Checked	Approved

Activity ID	Activity Name	OD	RD	Start	Finish	TF
FHW-4150a	Road Drainage and Road Pavement (FLH H.S., Merging Lane)(due to Claim No. 63)	48	48	10-Sep-18 A	23-Feb-19	-102
FHW-4330c	Construction of FL/RW2 (mass concrete wall, VO not yet received)	38	38	27-Aug-18 A	12-Feb-19	-97
FHW-4330d	Remaining Gullies and Road Pavement after Construction of FL/RW2 (VO not yet received)	25	25	14-Jan-19*	18-Feb-19	-97
FHW-4330e	Road Drainage MN9.1 - MN9.3	24	0	23-Aug-18 A	20-Dec-18	-54
Fanling Highway Zone 5 between CH7470 and CH7600 (Provision of Kiu Tau Footbridge)						
Kiu Tau Footbridge Reprovision (East)						
FHW-5070	Installation of Lighting Facilities (affect by design change which is under VO)	21	46	20-Jun-18 A	21-Feb-19	-100
FHW-5080	Fabrication of Pillar Box (affect by design change which is under VO)	32	8	15-Jun-18 A	31-Dec-18	337
FHW-5090	Erection of Pillar Box (affect by design change which is under VO)	30	30	02-Jan-19*	12-Feb-19	337
FHW-5100	Power Cable Laying Works (affect by design change which is under VO)	36	36	20-Dec-18*	02-Feb-19	-111
FHW-5110	Permanent Power Supply Connection (affect by design change which is under VO)	10	10	04-Feb-19	21-Feb-19	-100
FHW-5110a	Installation of Drainage Pipe	32	38	10-Sep-18 A	12-Feb-19	-92
FHW-5110b	Laying of Floor Tiles (affect by design change which is under VO)	72	62	28-Jun-18 A	12-Mar-19	-116
FHW-5110c	Installation of Suspended Ceiling (affect by design change which is under VO)	104	55	21-May-18 A	04-Mar-19	-109
Provision of BFA Facilities (Lift)						
FHW-L-104	Permanent Power Supply (affect by design change which is under VO)	10	10	04-Feb-19*	21-Feb-19	-111
FHW-L-106	Testing & Commissioning (affect by design change which is under VO)	11	11	22-Feb-19*	06-Mar-19	-111
Works at existing TWSRE						
FHW-5481	Noise Barrier NB72 Bay 5 - 9 (after water shutdown for twin DN1400 WM, due to claim)	73	51	26-Feb-18 A	27-Feb-19	-121
FHW-5490	Road Drainage, Pavement and TCSS duct laying (Merging lane next to NB72)(due to claim)	2	2	28-Feb-19*	01-Mar-19	-107
FHW-5500	Road Drainage (MS10.1-10.3A), Road Pavement and TCSS duct laying (Merging lane next to NB73)	31	44	21-Apr-18 A	19-Feb-19	-98
At-Grade Road Works (130m)						
FHW-5130	Road Pavement (FLH SB 1st lane) by re-surfacing (due to claim 63)	15	18	10-Sep-18 A	12-Jan-19	-72
FHW-5330a	Road Drainage (MN10.1-10.3A, gullies affected by Slope F18)	60	15	16-Dec-17 A	09-Jan-19	-69
FHW-5330c	Fill Replacement Works 3SW-D/F18 next to FLH NB (further modified by VO not yet received)	73	24	01-Aug-18 A	19-Jan-19	-117
FHW-5330d	Remaining Gullies, road formation and TCSS duct laying (log on effect by Slope F18 under VO)	25	25	21-Jan-19	25-Feb-19	-117
FHW-5330e	Road Pavement (log on effect by Slope F18 under VO)	14	14	26-Feb-19*	13-Mar-19	-117
Fanling Highway Zone 6 between CH7600 and CH7660 (Existing Vehicular Bridge)						
At-Grade Roadworks (60m)						
FHW-6330a	Road Drainage and Road Formation (FLH NB hard shoulder)	60	18	16-Dec-17 A	12-Jan-19	-72
Fanling Highway Zone 7 between CH7660 and CH7925 at NBZ (Section 1B)						
At-Grade Roadworks (265m)						
FHW-7330	Road Pavement (FLH NB 3rd lane at NBZ joint with CSHK) by re-surfacing	24	35	20-Aug-18 A	01-Feb-19	340
FHW-7340	Road Pavement, Central Barrier (FLH NB 4th lane) by re-surfacing	24	24	20-Aug-18 A	19-Jan-19	351



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Activity ID	Activity Name	OD	RD	Start	Finish	TF
	Remaining Works for Noise Barrier along widened Fanling Highway					
FHW-NB-110a	Installation of Steelworks & Panel for NB70 (25m, and extended 10m under VO199), adjacent to FLH SB lanes at Zone 1	6	6	11-Mar-19*	16-Mar-19	-120
FHW-NB-150	Installation of Steelworks & Panel for NB72 & NB73 (248m), adjacent to FLH SB lanes at Zones 4, 5 & 6	16	16	28-Feb-19	18-Mar-19	-121
FHW-NB-220	Installation of Steelworks & Panel for NB68 (63m), FLH central median at Zones 1	36	0	10-Sep-18 A	24-Oct-18 A	
FHW-NB-320	Installation of Steelworks & Panel for NB67-2 (85m), adjacent to FLH NB lanes at Zones 2 & 3	14	14	20-Dec-18*	08-Jan-19	-86
FHW-NB-330	Installation of Steelworks & Panel for NB69 (109m), adjacent to FLH NB lanes near LR1 at Zone 3	18	18	02-Feb-19*	01-Mar-19	-107
	Section II - Remainder of the Works (KD-3)					
	At Grade Link Road at Fanling Highway Interchange					
	Link Road 1 (near Abutment AB1)					
FHI-LR1-1010	Allow Contractor of Contract 4 for Installation of TCSS Cable at Abutment AB1	0	0		26-Oct-18 A	
FHI-LR1-1020	Backfilling works of abutment, Gully and Profile Barrier at Abutment AB1	20	34	28-May-18 A	31-Jan-19	341
FHI-LR1-1110	Road Formation and Pavement (CH 240 - CH 340, nr AB1)	15	15	19-Sep-18 A	09-Jan-19	360
FHI-LR1-1120	Road Formation, Road Drainage, TCSS ducting, Profile Barrier and Pavement (CH 80 - CH 240, nr NB66 & 67-1)	70	49	07-Feb-18 A	25-Feb-19	326
	Noise Barrier					
FHI-LR1-109	Noise Barrier NB67-1 - Remaining ground beam of Bay 3 (allow access from TWSRW)	7	7	20-Dec-18*	29-Dec-18	368
	Link Road 2 (near Abutment AA1)					
FHI-LR2-2020	Construction of Fill slope FL/F10 and Road Formation of Link Road nr Abutment AA1	78	55	25-Apr-18 A	04-Mar-19	320
FHI-LR2-2020	TCSS Duct Laying along Link Road next to FL/F10	52	52	28-Jul-18 A	28-Feb-19	323
FHI-LR2-2030	3SW-D/FR32 Bay 3207 (including temporary works)	43	37	19-Jul-18 A	04-Feb-19	338
FHI-LR2-2030	3SW-D/FR32 Bay 3208 (including temporary works)	46	46	27-Aug-18 A	21-Feb-19	329
FHI-LR2-2030	3SW-D/FR32 Bay 3209 (including temporary works)	46	20	15-Aug-18 A	15-Jan-19	355
FHI-LR2-2030	3SW-D/FR32 Bay 3210 (including temporary works)	45	45	30-Jun-18 A	20-Feb-19	294
FHI-LR2-2040	3SW-D/FR32 Bay 3212 (including temporary works)	37	37	20-Dec-18*	04-Feb-19	338
FHI-LR2-2040	3SW-D/FR32 Bay 3213 (including temporary works)	35	35	14-Feb-19	26-Mar-19	294
FHI-LR2-2040	3SW-D/FR32 Bay 3214 (including temporary works)	36	36	21-Feb-19	03-Apr-19	294
FHI-LR2-2050	Road Pavement and Drainage next to Abutment (after completion of NB73 Bay 12&13 Stem Wall)	20	20	20-Dec-18	15-Jan-19	355
FHI-LR2-2050	Road Formation, Road Drainage and Pavement (SMH1302 - 1303 & MY2.4 - 2.5) at grade	72	72	01-Mar-18 A	23-Mar-19	303
FHW-SG-103	Fabrication and Delivery of Sign Gantry DS11	99	26	28-Dec-17 A	22-Jan-19	334
FHW-SG-103	Erection of Sign Gantry DS11 (include On-site Fabrication)	15	15	23-Jan-19	15-Feb-19	334
FHW-SG-104	Fabrication and Delivery of Sign Gantry FADS11 and DS64	99	34	02-Feb-18 A	31-Jan-19	326
FHW-SG-104	Erection of Sign Gantry FADS11 and DS64 (include On-site Fabrication)	15	15	01-Feb-19	25-Feb-19	326
	Link Road 3 (near Abutment AD1)					
FHI-LR3-3020	Permanent Fill Slope, Construction of Gullies and Profile Barriers	48	35	25-Apr-18 A	01-Feb-19	315
FHI-LR3-3030	Road Pavement	1	1	02-Feb-19*	02-Feb-19	315

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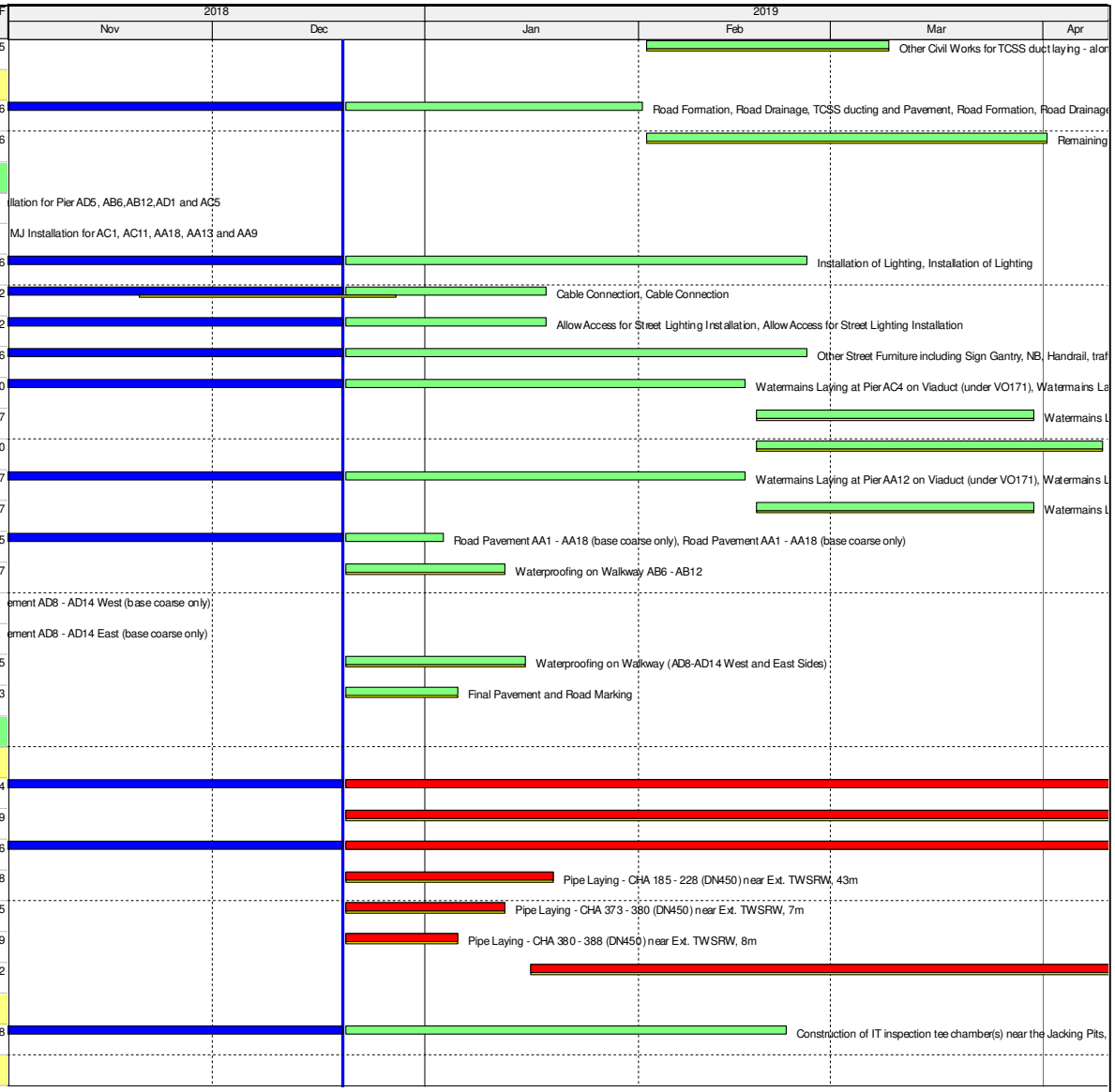
Activity ID	Activity Name	OD	RD	Start	Finish	TF
FHI-LR3-3040	Other Civil Works for TCSS duct laying - along Link Road 3	25	25	02-Feb-19	09-Mar-19	315
Link Road 4 (near Abutment AC1)						
FHI-LR4-4030	Road Formation, Road Drainage, TCSS ducting and Pavement	55	35	27-Nov-17 A	01-Feb-19	296
FHI-LR4-4040	Remaining Section of Carriageway connect to FLH	44	44	02-Feb-19*	01-Apr-19	296
Viaduct - Pavement, Street Furnitures, Lighting inside Internal Voids and Others						
RS-1000a	MJ Installation for Pier AD5, AB6,AB12,AD1 and AC5	72	0	15-Mar-18 A	25-Oct-18 A	
RS-1000b	MJ Installation for AC1, AC11, AA18, AA13 and AA9	33	0	28-May-18 A	31-Oct-18 A	
RS-1010d	Installation of Lighting	96	49	09-Mar-18 A	25-Feb-19	326
RS-1010e	Cable Connection	31	23	22-Oct-18 A	18-Jan-19	352
RS-1020a	Allow Access for Street Lighting Installation	132	23	11-Jan-18 A	18-Jan-19	352
RS-1020b	Other Street Furniture including Sign Gantry, NB, Handrail, traffic signs, etc, for Bridge A, B, C and D	112	49	26-Feb-18 A	25-Feb-19	326
RS-1040b	Watermains Laying at Pier AC4 on Viaduct (under VO171)	45	42	21-May-18 A	16-Feb-19	290
RS-1040c	Watermains Laying at Pier AD9 on Viaduct (under VO171)	36	36	18-Feb-19*	30-Mar-19	297
RS-1040d	Watermains Laying at Pier AB7 on Viaduct (under VO171)	43	43	18-Feb-19*	09-Apr-19	290
RS-1040e	Watermains Laying at Pier AA12 on Viaduct (under VO171)	52	42	21-May-18 A	16-Feb-19	297
RS-1040f	Watermains Laying at Pier AA7 on Viaduct (under VO171)	36	36	18-Feb-19*	30-Mar-19	297
RS-1070c	Road Pavement AA1 - AA18 (base coarse only)	6	10	28-May-18 A	03-Jan-19	365
RS-1080e	Waterproofing on Walkway AB6 - AB12	18	18	20-Dec-18*	12-Jan-19	357
RS-1090a2	Road Pavement AD8 - AD14 West (base coarse only)	3	0	27-Sep-18 A	20-Oct-18 A	
RS-1090b2	Road Pavement AD8 - AD14 East (base coarse only)	3	0	27-Sep-18 A	20-Oct-18 A	
RS-1090c	Waterproofing on Walkway (AD8-AD14 West and East Sides)	20	20	20-Dec-18*	15-Jan-19	355
RS-1110	Final Pavement and Road Marking	12	12	20-Dec-18*	05-Jan-19	363
WSD Works						
DN450 Fire Mains (CHA)						
WA-1010c	Pipe Laying - CHA 38 - 113 (DN450) near Ext. TWSRW, 20m	11	102	16-Apr-18 A	03-May-19	-254
WA-1020	Pipe Laying - CHA 113 - 135 (DN450) near Ext. TWSRW, 20m	102	102	20-Dec-18*	03-May-19	-169
WA-1030	Pipe Laying - CHA 135 - 160 (DN450) near Ext. TWSRW, 25m	19	102	18-Apr-18 A	03-May-19*	-156
WA-1110a	Pipe Laying - CHA 185 - 228 (DN450) near Ext. TWSRW, 43m	24	24	20-Dec-18*	19-Jan-19	-78
WA-1130b	Pipe Laying - CHA 373 - 380 (DN450) near Ext. TWSRW, 7m	18	18	20-Dec-18*	12-Jan-19	-85
WA-1130c	Pipe Laying - CHA 380 - 388 (DN450) near Ext. TWSRW, 8m	12	12	20-Dec-18*	05-Jan-19	-79
WA-2080	Pipe Laying - CHA 624 - 663 (DN450) along Ext. TWSRW SB, 39m	75	75	16-Jan-19*	24-Apr-19	-162
DN1200 Water Mains (CHC)						
WC-1030	Construction of IT inspection tee chamber(s) near the Jacking Pits	47	47	10-May-18 A	22-Feb-19	328
DN2200 Water Mains (CHF)						



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Activity ID	Activity Name	OD	RD	Start	Finish	TF
WF-4000	Modification of Existing DN2200 DAV Chamber at FLH NB near Kiu Tau Footbridge (covered by VO no.50)	35	35	20-Dec-18*	01-Feb-19	340
Existing Nam Wa Po Trunk Sewage Pumping Station (PST3)						
PS-1010	Construction of New Boundary Wall for Pumping Station (PST3)	80	74	25-Nov-16 A	26-Mar-19	301
Stage 1A - Realignment of Tai Wo Service Road West (KD-7)						
TWSRW Zone 5 betweeen CH376 and CH520						
Construction of Retaining Structures						
TWSRW-512(	Remaining works incl. railing, u-channel on top of Bored Pile Wall (wait for VO)	22	22	25-Jun-18 A	17-Jan-19	-76
TWSRW-515(	Slope Works and Retaining Wall of FL-C2 (covered by VO183)	60	25	01-Dec-17 A	21-Jan-19	-79
At-Grade Roadworks						
TWSRW-511(	Retaining Wall RW9 - Bay 9002 & 9003 (covered by VO No.116)	45	26	05-Feb-16 A	22-Jan-19	-80
TWSRW-512(	Filling Works between Retaining Wall RW7 and RW8	192	39	07-Jun-16 A	13-Feb-19	-93
TWSRW-512(	Road Pavement and remaining works of Vehicular Access to Lot 81	27	27	12-Jul-18 A	23-Jan-19	-96
TWSRW-516(	Construction of Extended Podium near RW7 incl. filling works & slope protection (covered by VO No.100)	85	48	27-Oct-16 A	23-Feb-19	-102
TWSRW-517(	Construction of Pavilion (covered by VO No.137)	49	49	10-Aug-18 A	25-Feb-19	-103
TWSRW Zone 7 betweeen CH530 and CH640						
At-Grade Roadworks						
TWSRW-719(	Remaining Road Drainage, Road Formation, Road Pavement and Footpath (incl. Zone 6 & Zone 7)	44	44	20-Dec-18*	19-Feb-19	-98
TWSRW Zone 8 betweeen CH640 and CH695						
At-Grade Roadworks						
TWSRW-812(	Remaining Road Drainage, Road Formation, Road Pavement and Footpath	60	60	20-Dec-18*	09-Mar-19	315
Remainder of the Works						
TWSRW-9020	Filling Works to the abandoned section of TWSRW and modify existing sewerage manhole	75	75	20-Dec-18*	27-Mar-19	300
Utilities Laying Works						
UU-1010A	Utilities Duct Laying in Area 1, Phase 2, CLP - 132kV(150mVA), approx.30m at interface section	16	12	10-Jan-18 A	05-Jan-19	-164
UU-1010B	Utilities Duct Laying in Area 1, Phase 2, Towngas - DN600, approx.20m at interface section	58	58	01-Mar-19	14-May-19	-164
UU-1030	Utilities Duct Laying in Area 3, Phase 1 (along existing TWSRW, Approx. 150m) (by utilities undertakers)	7	7	20-Dec-18*	26-Dec-18	-70
UU-1030A	Utilities Duct Laying in Area 3, Phase 2, CLP - 132kV(150mVA), approx. 30m	27	49	10-Jan-18 A	25-Feb-19	-103
UU-1040A	Utilities Duct Laying in Area 4, Phase 2, Towngas - DN600 & DN400, approx. 50m (by their own TTA)	121	50	15-Sep-16 A	26-Feb-19	-137
UU-1040B	Utilities Duct Laying in Area 4, Phase 2, CLP - 132kV(150mVA), approx. 50m (by their own TTA)	33	33	27-Feb-19	06-Apr-19	-137
Switch-Over of Existing Utilitiess						
UU-SO-2520	Switch-over Works (CLP 11kV)	16	16	20-Dec-18*	04-Jan-19	447
UU-SO-3500	Switch-over Works (Towngas, DN400)	30	30	27-Feb-19*	28-Mar-19	364
Remaining Works for Noise Barrier along realigned TWSRW						
TWSRW-NB-1(	Noise Barrier Steelworks & Panel for NB2 at Zone 5	15	15	24-Jan-19*	16-Feb-19	-96

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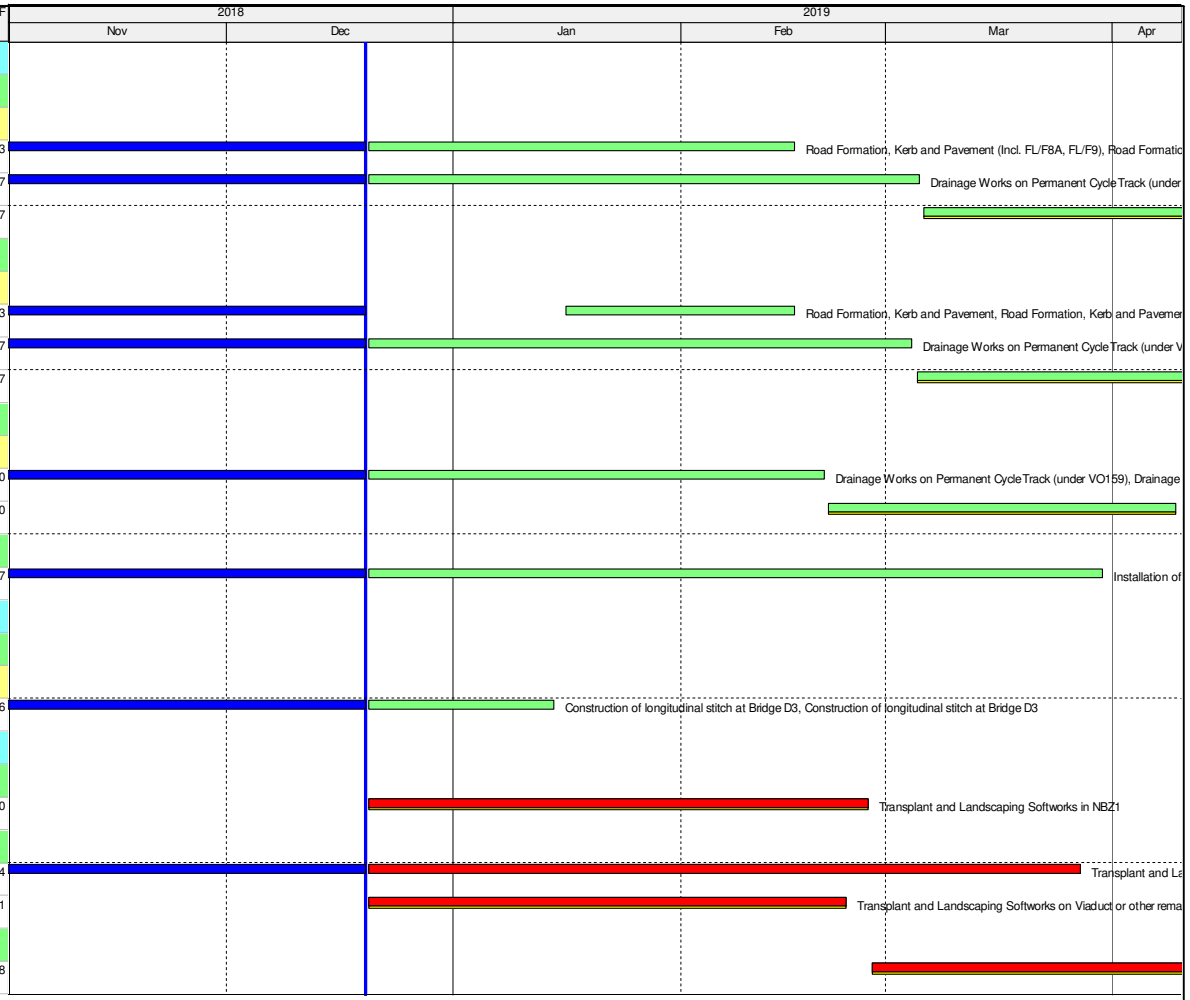
	Stage N4A & N4B - Realignment of Tai Wo Service Road East (KD-13 & KD-14)					
	TWSRE Zone 1 between CH100 and CH270					
	At-Grade Roadworks					
TWSRE-1180	Road Formation, Kerb and Pavement (Incl. FL/F8A, FL/F9)	24	42	11-Oct-17 A	16-Feb-19	333
TWSRE-1190	Drainage Works on Permanent Cycle Track (under VO159)	80	56	15-Jan-18 A	05-Mar-19	287
TWSRE-1200	Road Pavement on Permanent Cycle Track	32	32	06-Mar-19	12-Apr-19	287
	TWSRE Zone 2 between CH270 and CH380					
	At-Grade Roadworks					
TWSRE-2100	Road Formation, Kerb and Pavement	20	22	23-Oct-17 A	16-Feb-19	333
TWSRE-2110	Drainage Works on Permanent Cycle Track (under VO159)	80	55	26-Mar-18 A	04-Mar-19	287
TWSRE-2120	Road Pavement on Permanent Cycle Track	33	33	05-Mar-19	12-Apr-19	287
	TWSRE Zone 3 between CH380 and CH456					
	At-Grade Roadworks					
TWSRE-3050	Drainage Works on Permanent Cycle Track (under VO159)	45	45	03-Apr-18 A	20-Feb-19	290
TWSRE-3060	Road Pavement on Permanent Cycle Track	40	40	21-Feb-19	09-Apr-19	290
	Remaining Works for Noise Barrier along realigned TWSR East					
TWSRE-NB-12	Installation of Steelwork & Transparent Panel - Noise Barrier NB3 (254m)	35	78	09-Jun-17 A	30-Mar-19	297
	Stage 1C - Viaduct Structure & TCSS Civil Provisions (KD-9)					
	Viaduct Bridge Segement Erection					
	Key Segment Erection and Stitch Casting (Narrow-box Section)					
KD-D-2000	Construction of longitudinal stitch at Bridge D3	35	19	11-May-18 A	14-Jan-19	356
	Landscaping & Establishment Works (KD-4, 4A, 5, 5A, 6)					
	Secton 3A - Landscaping Softworks in NBZ1					
S3A-1000	Transplant and Landscaping Softworks in NBZ1	50	50	20-Dec-18*	26-Feb-19	-140
	Secton 3 - Remainder of Landscaping Softworks Not Included in Secton 3A					
S3-1000	Transplant and Landscaping Softworks on At grade Road	131	75	26-Mar-18 A	27-Mar-19	-164
S3-1010	Transplant and Landscaping Softworks on Viaduct or other remaining area	48	48	20-Dec-18*	23-Feb-19	-101
	Section 4A: Establishment Works for Landscape Softworks under Section 3A					
S4A-1000	Establishment Works at NBZ1	365	365	27-Feb-19	26-Feb-20	-178



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

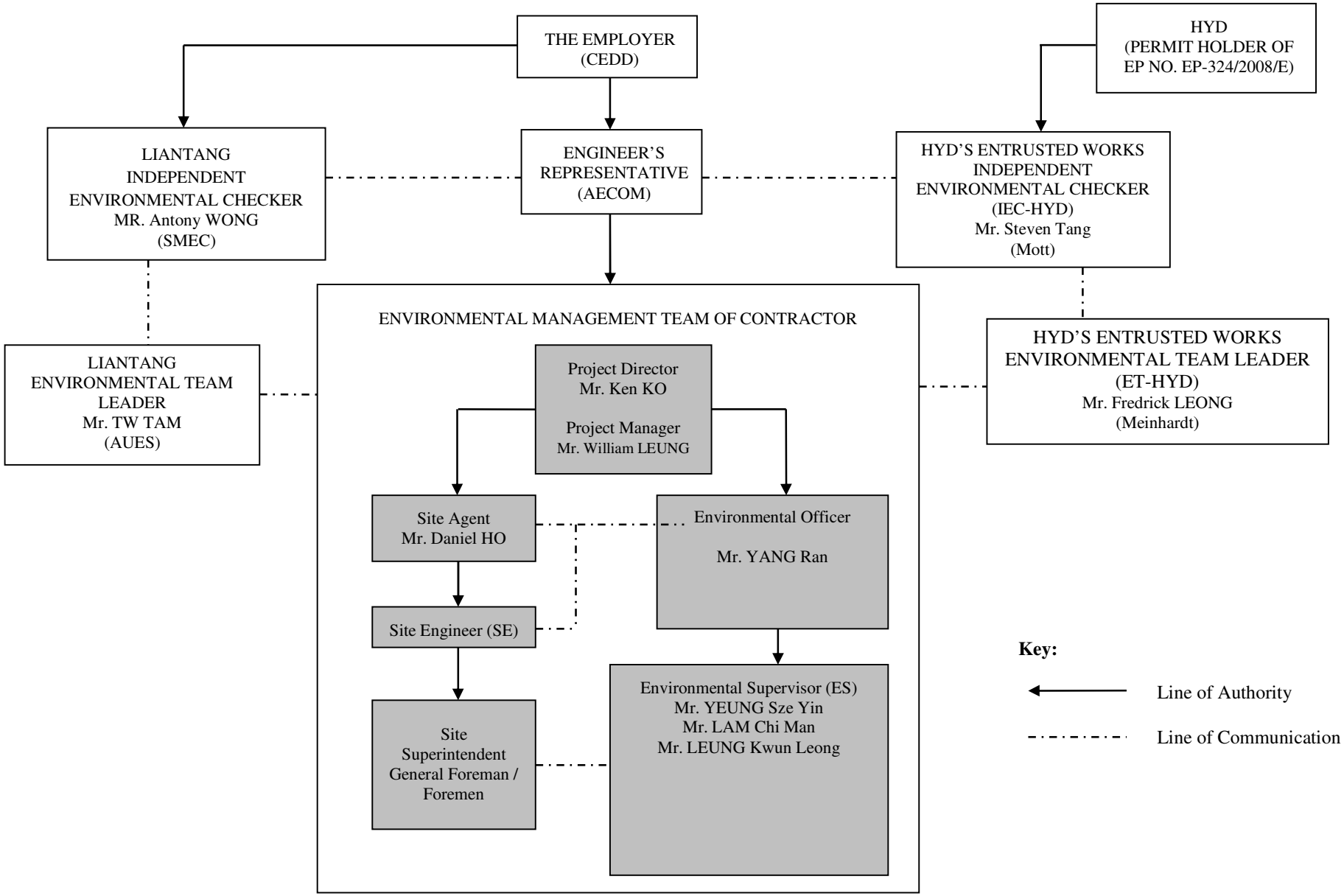
CEDD Contract No. CV/2012/09
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3
3-Month Rolling Programme

3MPR065_____Page 6 of 6_____20-Dec-18

3-Month Rolling Programme updated to 2018-12-20

Date	Revision	Checked	Approved

Appendix B
Project Organization Structure


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

Appendix C
Calibration Certificates of Monitoring Equipment

TISCH Environmental

RECALIBRATION DUE DATE:
February 13, 2019

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	February 13, 2018	**Rootsmeter S/N:** 438320	**Ta:** 293	°K
Operator:	Jim Tisch		**Pa:** 763.3	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **1612**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.3970	3.2	2.00
2	3	4	1	1.0000	6.3	4.00
3	5	6	1	0.8900	7.9	5.00
4	7	8	1	0.8440	8.7	5.50
5	9	10	1	0.7010	12.6	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
1.0172	0.7281	1.4293	0.9958	0.7128	0.8762
1.0130	1.0130	2.0213	0.9917	0.9917	1.2392
1.0109	1.1358	2.2599	0.9896	1.1120	1.3854
1.0098	1.1964	2.3702	0.9886	1.1713	1.4530
1.0046	1.4331	2.8586	0.9835	1.4030	1.7524
QSTD	**m=**	**2.02017**	**QA**	**m=**	**1.26500**
	b=	**-0.03691**		**b=**	**-0.02263**
	r=	**0.99988**		**r=**	**0.99988**

Calculations

Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime

For subsequent flow rate calculations:

Qstd= $1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$

Qa= $1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg

Key
ΔH: calibrator manometer reading (in H2O)
ΔP: rootsmeter manometer reading (mm Hg)
Ta: actual absolute temperature (°K)
Pa: actual barometric pressure (mm Hg)
b: intercept
m: slope

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

www.tisch-env.cor
TOLL FREE: (877)263-761(
FAX: (513)467-900

TSP Sampler Calibration

SITE

Location: Lian Tang 3 — Date: January 5, 2019
Sampler: TE-5170 MFC (Serial # : 2359) — Tech: Sam Wong

CONDITIONS

Barometric Pressure (in Hg):	40.15	Corrected Pressure (mm Hg):	1020
Temperature (deg F):	66	Temperature (deg K):	292
Average Press. (in Hg):	40.15	Corrected Average (mm Hg):	1020
Average Temp. (deg F):	66	Average Temp. (deg K):	292

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.02017
Model:	TE-5025A	Qstd Intercept:	-0.03691
Serial#:	1612	Date Certified:	February 13, 2018

CALIBRATIONS

Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)
1	12.00	2.025	56.0	65.55
2	10.00	1.850	52.0	60.86
3	8.20	1.677	48.0	56.18
4	5.20	1.339	38.0	44.48
5	3.20	1.055	30.0	35.11

LINEAR REGRESSION

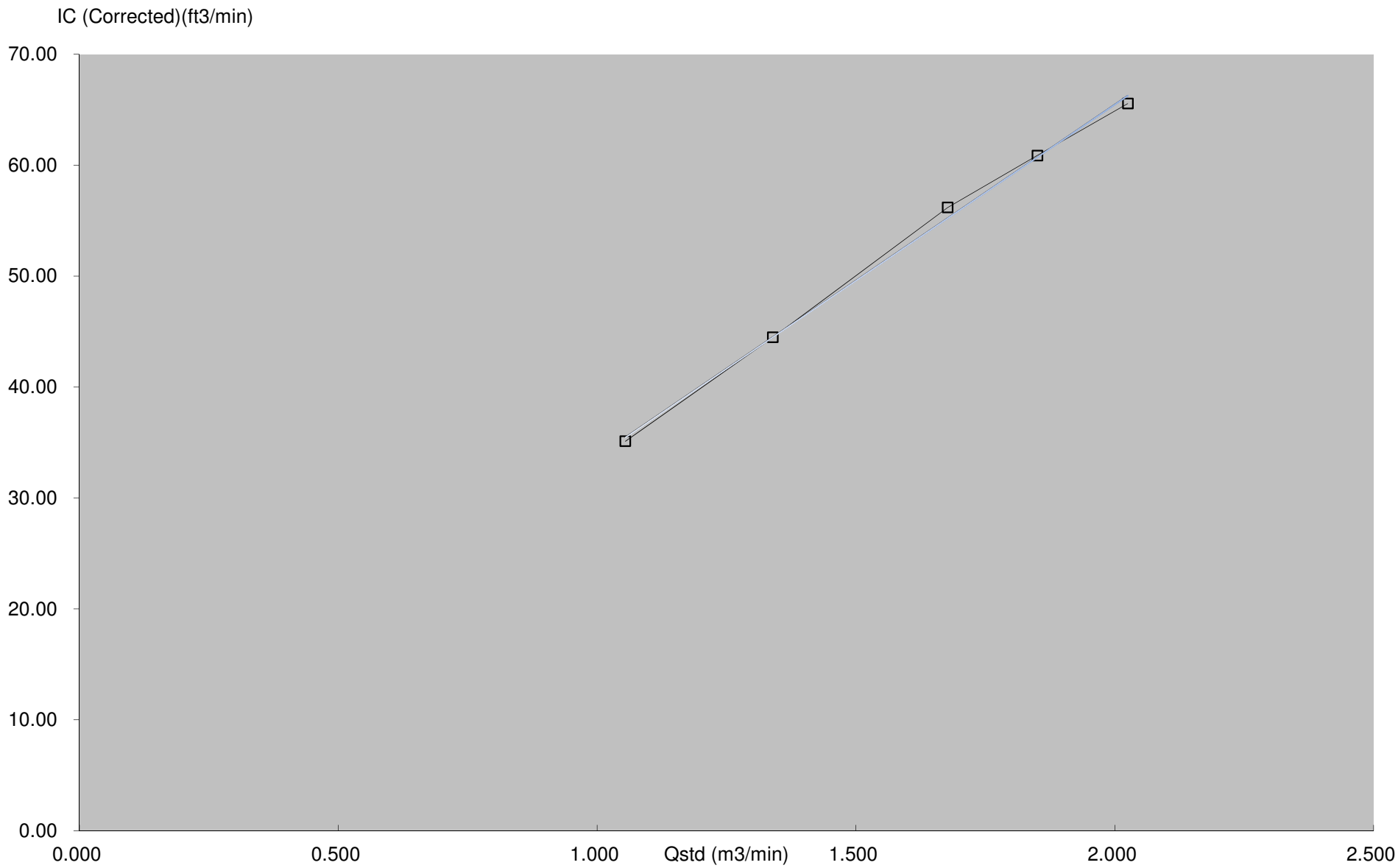
Slope =	31.7376
Intercept =	1.9907
Corr. coeff.=	0.9987
# of Observations:	5

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)
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. 803615 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. : Q81437 **Date of receipt :** 13-Apr-18

Item Tested

Description : Sound Level Calibrator
Manufacturer : Rion **I.D.** : 217656
Model : NC-74 **Serial No.** : 34678506

Test Conditions

Date of Test : 20-Apr-18 **Supply Voltage** : --
Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

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

Test Results

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

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S014	Spectrum Analyzer	707126	NIM-PRC & SCL-HKSAR
S240	Sound Level Calibrator	703741	NIM-PRC & SCL-HKSAR
S041	Universal Counter	802061	SCL-HKSAR
S206	Sound Level Meter	707129	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 : Elva Chong **Approved by :** Kin Wong

Date: 20-Apr-18

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

Certificate No. 803615

Results :

1. Generated Sound Pressure Level

UUT Nominal Value (dB)	Measured Value (dB)	IEC 60942 Class 1 Spec.
94.0	94.2	± 0.4 dB

Uncertainty : ± 0.2 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	0.999	± 1 %

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

4. Total Distortion : < 1.1 %
IEC 60942 Class 1 Spec. : < 4 %
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 : 1 016 hPa.

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

Hong Kong Calibration Ltd.
香 港 校 正 有限公司

Calibration Certificate

Certificate No. 804605 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. : Q81807 **Date of receipt :** 9-May-18

Item Tested

Description : Sound Level Meter

Manufacturer : Rion **I.D.** : --

Model : NL-52 **Serial No.** : 01143484

Test Conditions

Date of Test : 15-May-18 **Supply Voltage** : --

Ambient Temperature : (23 ± 3)°C **Relative Humidity :** (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01, IEC 61672.

Test Results

All results were within the IEC 61672 Type1 or manufacturer's specification.

The results are shown in the attached page(s).

Main Test equipment used:

Equipment No.	Description	Cert. No.	Traceable to
S017	Multi-Function Generator	C170120	SCL-HKSAR
S240	Sound Level Calibrator	803357	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), or by reference to a natural constant.
The test results apply to the above Unit-Under-Test only

Calibrated by : Elva Chong

Approved by : Kin Wong

Date: 15-May-18

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

Calibration Certificate

Results :

1. **Self-generated noise:** 16.0 dBA (Mfr's Spec ≤ 17 dBA)

2. **Acoustical signal test**

UUT Setting				Applied Value (dB)	UUT Reading (dB)
Range (dB)	Frequency Weighting	Time Weighting	Octave Filter		
20-130	A	F	OFF	94.0	94.0
		S	OFF		94.0
	C	F	OFF		94.0
	Z	F	OFF		94.0
	A	F	OFF	114.0	114.1
		S	OFF		114.1
	C	F	OFF		114.1
	Z	F	OFF		114.1

IEC 61672 Type 1 Spec. : ± 1.1 dB
Uncertainty : ± 0.1 dB

3 **Electrical signal tests of frequency weightings** (A weighting)

Frequency	Attenuation (dB)	IEC 61672 Type 1 Spec.
31.5 Hz	-39.6	- 39.4 dB, ± 2 dB
63 Hz	-26.2	- 26.2 dB, ± 1.5 dB
125 Hz	-16.2	- 16.1 dB, ± 1.5 dB
250 Hz	-8.7	- 8.6 dB, ± 1 dB
500 Hz	-3.2	- 3.2 dB, ± 1.4 dB
1 kHz	0.0 (Ref)	0 dB, ± 1.1 dB
2 kHz	+1.0	+ 1.2 dB, ± 1.6 dB
4 kHz	+0.7	+ 1.0 dB, ± 1.6 dB
8 kHz	-1.2	- 1.1 dB, + 2.1 dB ~ -3.1 dB
16 kHz	-8.6	- 6.6 dB, + 3.5 dB ~ - 17.0 dB

Uncertainty : ± 0.1 dB

Calibration Certificate

4. Frequency & Time weightings at 1 kHz

4.1 Frequency Weighting (Fast)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
A	94.0	94.0 (Ref.)	- -	± 0.4 dB
C	94.0	94.0	0.0	
Z	94.0	94.0	0.0	

4.2 Time Weighting (A-weighted)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
Fast	94.0	94.0 (Ref.)	- -	± 0.3 dB
Slow	94.0	94.0	0.0	
Time-averaging	94.0	94.0	0.0	

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 : 1 009 hPa.
4. Preamplifier model : NH-25 , S/N : 21113
5. Firmware Version: 1.8
6. Power Supply Check: OK
7. The UUT was adjusted with the laboratory's sound calibrator at the reference sound pressure level before the calibration.

---------- 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 January 2019

January 2019						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 The First Day of January	2 24-hour TSP + 3 x 1-hour TSP, Noise (SR77) ET Site Walk(14:00pm – 18:00pm)	3	4	5
6	7	8 24-hour TSP + 3 x 1-hour TSP, Noise (SR77) ET Site Walk(14:00am – 18:00pm	9	10	11	12
13	14 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	15	16 ET Site Walk(09:30 am – 11:00 am) with Liantang Project-wide ET and IEC + SSEMC	17	18 24-hour TSP + 3 x 1-hour TSP (SR77)	19
20	21	22	23	24 24-hour TSP + 3 x 1-hour TSP, Noise (SR77) ET Site Walk(09:30am – 11:00am)	25	26
27	28 ET Site Walk(14:30am – 18:00 am) with Fanling Stage 2 IEC & Liantang Project-wide ET and IEC	29	30 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	31		

Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2
Impact Monitoring & Site Auditing Schedule for February 2019

February 2019						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	5 Lunar New Year's Day	6 The second day of Lunar New Year	7 The third day of Lunar New Year	8 24-hour TSP + 3 x 1-hour TSP ET Site Walk(09:30am – 11:00am)	9
10	11	12	13	14 24-hour TSP + 3 x 1-hour TSP, Noise (SR77) ET Site Walk(09:30am – 11:00am) (To be confirmed)	15	16
17	18	19	20 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)	21	22	23
24	25	26 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	27	28 ET Site Walk(09:30am – 11:00 am) with Fanling Stage 2 IEC & Liantang Project-wide ET and IEC (To be confirmed)		

Appendix E
Meteorological Data Extracted from Hong Kong Observatory

Daily Extract of Meteorological Observations , January 2019

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	1026.5	15.9	13.8	11.4	8.0	68	84	Trace	4.6	***	***
02	1025.4	16.4	14.8	13.5	8.9	68	87	Trace	0.1	***	***
03	1024.3	17.3	16.2	14.9	13.4	84	91	0.1	0.0	***	***
04	1022.8	20.9	18.8	16.8	15.8	83	87	0.1	1.3	***	***
05	1020.5	22.7	19.8	18.9	17.6	87	88	0.0	0.5	***	***
06	1021.5	20.0	18.6	17.6	15.7	83	92	Trace	0.0	***	***
07	1021.4	20.0	18.5	17.4	15.6	83	89	0.0	0.0	***	***
08	1021.3	20.7	19.2	17.2	16.5	84	94	0.2	0.0	***	***
09	1022.3	18.7	17.8	17.2	15.1	84	89	0.0	2.7	***	***
10	1020.2	20.8	19.2	17.4	16.0	82	88	0.0	2.6	***	***
11	1018.6	23.3	20.6	18.2	17.7	84	55	0.0	6.5	***	***
12	1018.3	22.8	20.9	19.3	17.9	83	64	Trace	8.6	***	***
13	1019.3	19.8	18.5	17.7	16.8	89	91	Trace	0.0	***	***
14	1018.8	19.7	18.5	17.6	16.2	86	94	Trace	0.1	***	***
15	1018.8	21.1	19.0	17.0	16.9	88	88	4.0	1.2	***	***
16	1020.5	19.9	17.3	15.9	12.2	72	87	0.0	0.8	***	***
17	1022.2	19.5	16.7	14.6	11.3	70	55	0.0	8.1	***	***
18	1022.1	18.5	17.1	15.8	12.6	75	79	0.0	2.0	***	***
19	1019.6	21.9	18.8	17.1	14.2	75	85	0.2	1.7	***	***
20	1018.9	23.4	20.4	18.1	15.3	73	76	0.1	5.2	***	***
21	1021.8	20.0	17.8	15.8	11.0	64	66	0.0	4.2	***	***
22	1022.3	19.1	16.0	13.1	6.2	53	21	0.0	10.0	***	***
23	1021.0	19.2	16.2	13.7	8.8	62	3	0.0	9.8	***	***
24	1020.6	19.6	16.9	15.0	11.5	71	10	0.0	10.0	***	***
25	1021.2	22.2	18.7	16.1	12.3	67	13	0.0	10.2	***	***
26	1023.1	21.2	18.2	16.7	13.3	73	17	0.0	8.6	***	***
27	1023.6	19.4	16.9	15.6	11.5	71	80	0.0	7.0	***	***
28	1021.6	20.3	17.5	15.7	11.4	68	63	0.0	3.3	***	***
29	1021.4	20.5	18.5	16.9	13.7	74	39	0.0	9.8	***	***
30	1020.8	21.6	19.3	17.2	14.4	73	69	0.0	6.7	***	***
31	1018.9	24.5	21.7	18.9	17.2	76	67	0.0	7.7	***	***
Mean/Total	1021.3	20.4	18.1	16.4	13.7	76	68	4.7	133.3	***	***
Normal§	1020.3	18.6	16.3	14.5	11.4	74	61	24.7	143.0	060	25.3

*** 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

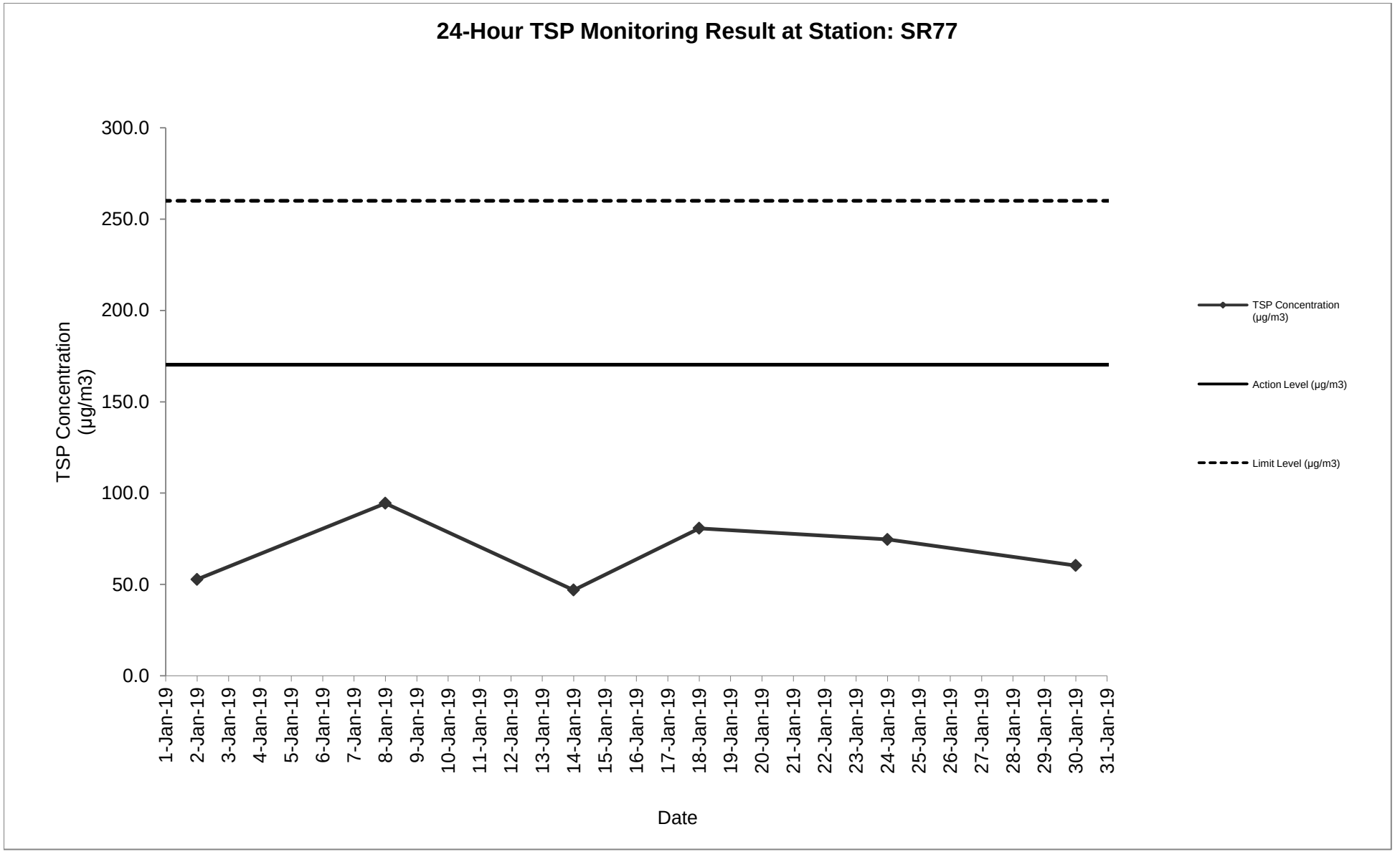
Appendix F
Air Quality Monitoring Results and their Graphical Presentation

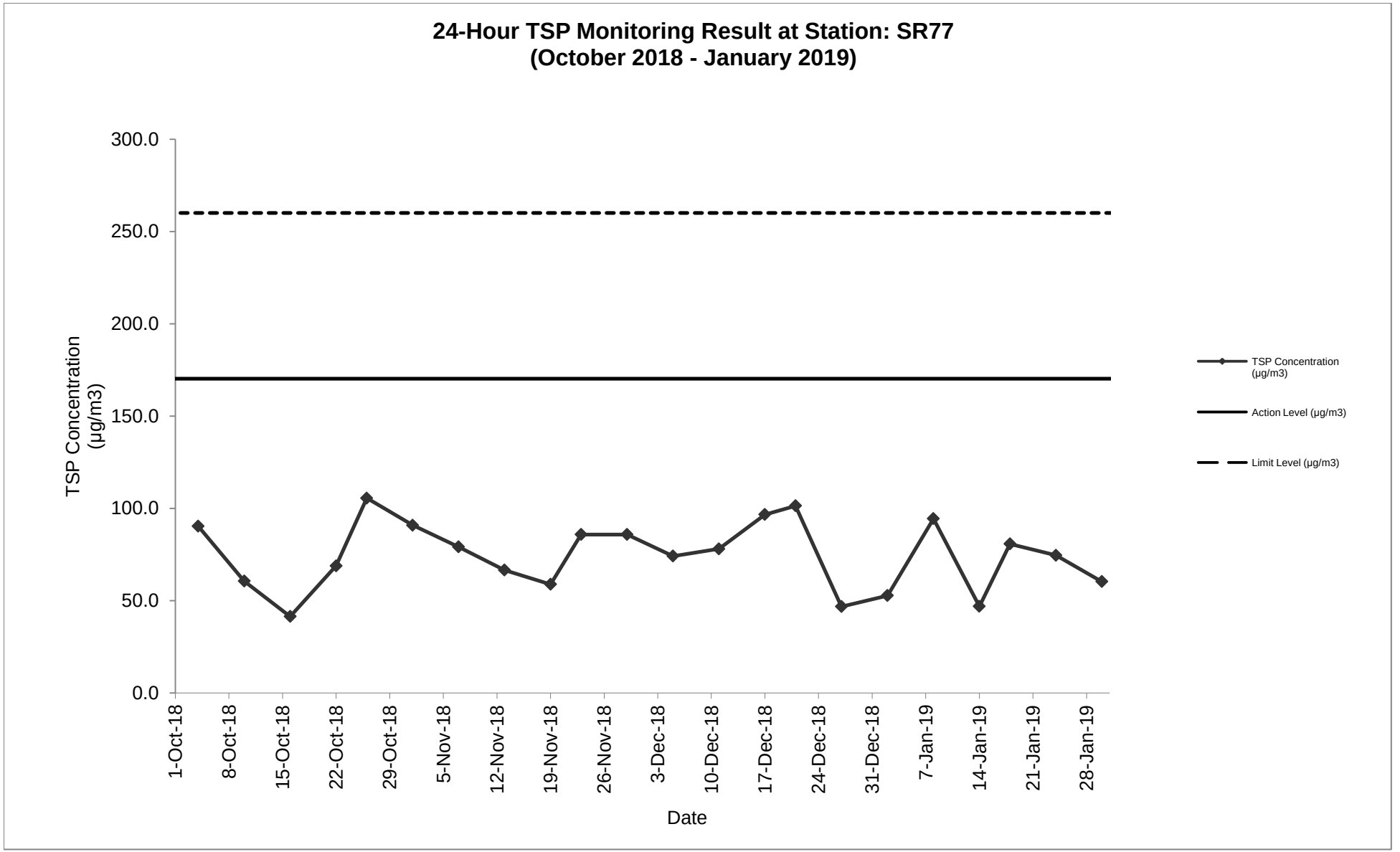
Appendix F
Air Quality Monitoring Results and their Graphical Presentation

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 (μg/m^3)	Action Level (μg/m3)	Limit Level (μg/m3)	Wind speed m/s	Wind direction	NOE	IR
				Initial Wt.	Final Wt.	Wt. of Dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate	Initial	Final	Avg Flow Rate								
2-Jan-19	Cloudy	12:11	C214	2.6835	2.7933	0.1098	9414.67	9438.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	52.8	170.3	260.0	<5	N		
8-Jan-19	Cloudy	12:14	C216	2.6663	2.8627	0.1964	9441.67	9465.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	94.4	170.3	260.0	<5	N		
14-Jan-19	Cloudy	12:12	C218	2.6676	2.7652	0.0976	9468.67	9492.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	46.9	170.3	260.0	<5	N		
18-Jan-19	Cloudy	12:14	C220	2.6710	2.8389	0.1679	9495.67	9519.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	80.7	170.3	260.0	<5	N		
24-Jan-19	Sunny	12:11	C222	2.6666	2.8218	0.1552	9522.67	9546.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	74.6	170.3	260.0	<5	N		
30-Jan-19	Fine	12:14	C224	2.6755	2.8012	0.1257	9549.67	9573.67	24.00	51	51	51.0	1.44	1.44	1.44	2079.59	60.4	170.3	260.0	<5	N		
																Average	68.3						
																Min	46.9						
																Max	94.4						

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


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

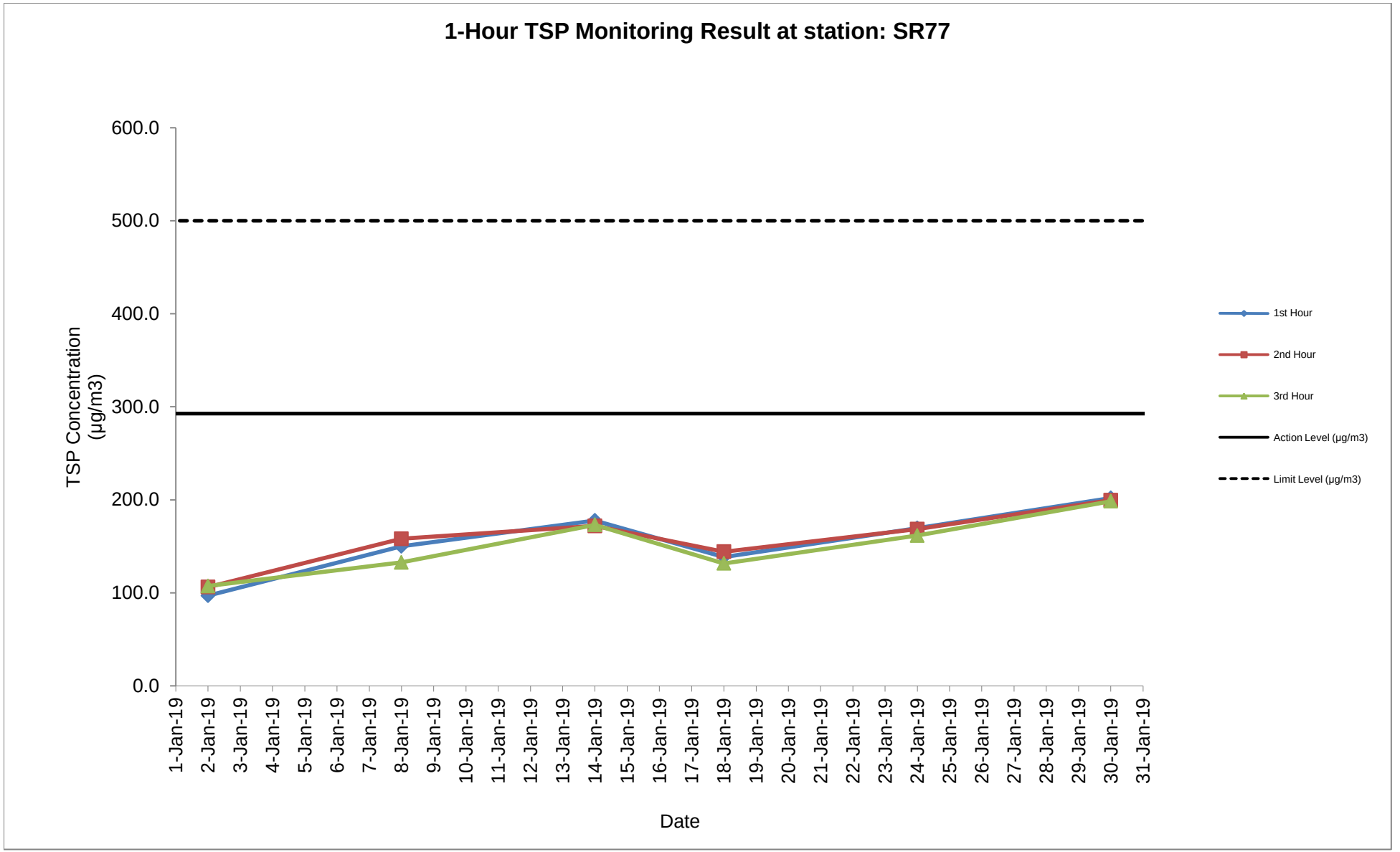

24-Hour TSP Monitoring Result at Station: SR77
(October 2018 - January 2019)
TSP Concentration (µg/m3)
300.0
250.0
200.0
150.0
100.0
50.0
0.0
1-Oct-18
8-Oct-18
15-Oct-18
22-Oct-18
29-Oct-18
5-Nov-18
12-Nov-18
19-Nov-18
26-Nov-18
3-Dec-18
10-Dec-18
17-Dec-18
24-Dec-18
31-Dec-18
7-Jan-19
14-Jan-19
21-Jan-19
28-Jan-19
Date
TSP Concentration (µg/m3)
Action Level (µg/m3)
Limit Level (µg/m3)

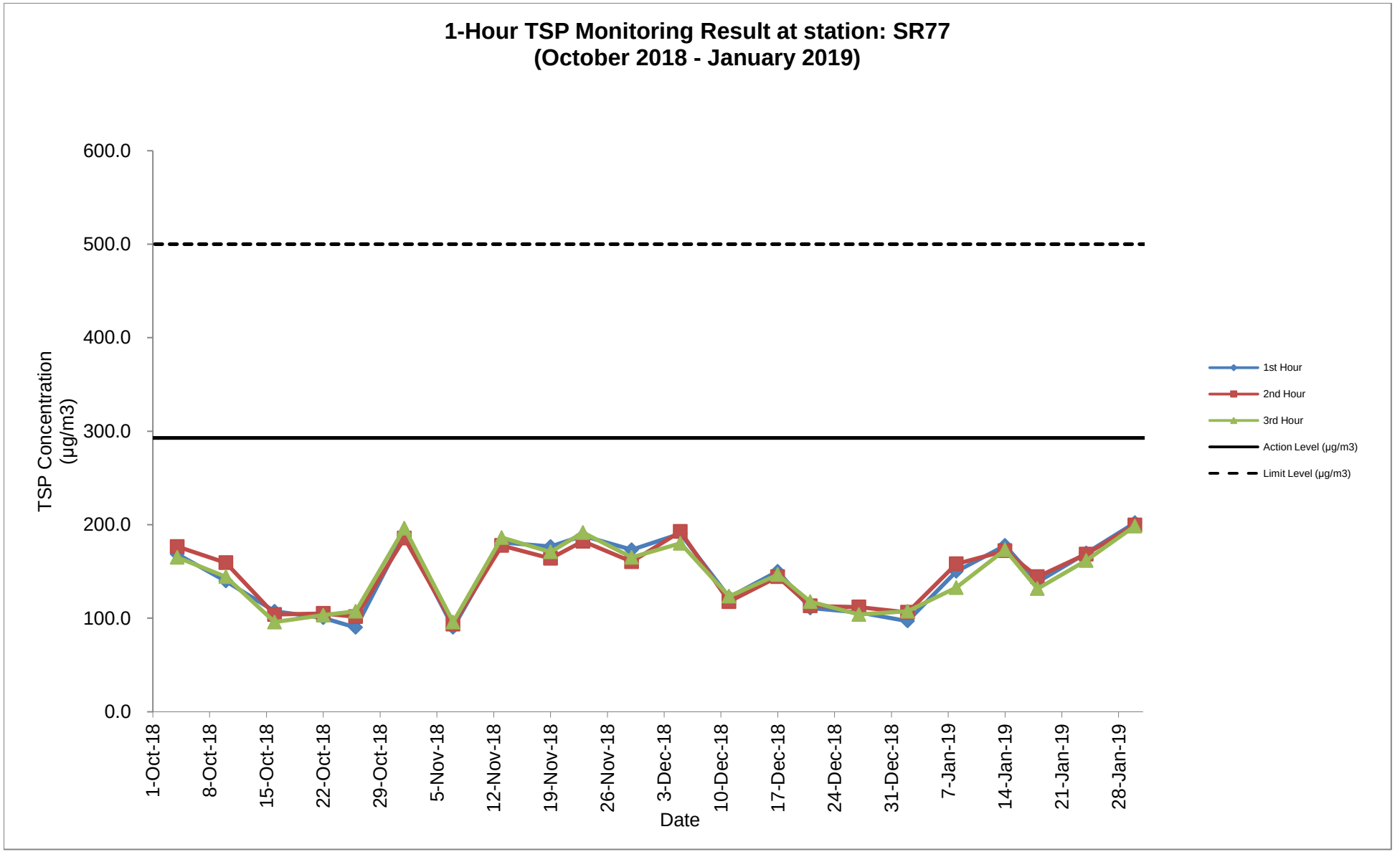
Appendix F
Air Quality Monitoring Results and their Graphical Presentation

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 (µg/m3)	Limit Level (µg/m3)	Wind speed m/s	Wind direction	NOE	IR
				Initial Wt.	Final Wt.	Wt. of Dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate	Initial	Final	Avg Flow Rate								
2-Jan-19	Cloudy	09:00	C215A	2.6657	2.6741	0.0084	9411.67	9412.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	96.9	292.7	500.0	<5	N		
	Cloudy	10:04	C215B	2.6491	2.6583	0.0092	9412.67	9413.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	106.2	292.7	500.0	<5	N		
	Cloudy	11:08	C215C	2.6708	2.6801	0.0093	9413.67	9414.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	107.3	292.7	500.0	<5	N		
8-Jan-19	Cloudy	09:00	C217A	2.6714	2.6844	0.0130	9438.67	9439.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	150.0	292.7	500.0	<5	N		
	Cloudy	10:04	C217B	2.6551	2.6688	0.0137	9439.67	9440.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	158.1	292.7	500.0	<5	N		
	Cloudy	11:09	C217C	2.6646	2.6761	0.0115	9440.67	9441.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	132.7	292.7	500.0	<5	N		
14-Jan-19	Cloudy	09:00	C219A	2.6647	2.6801	0.0154	9465.67	9466.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	177.7	292.7	500.0	<5	N		
	Cloudy	10:04	C219B	2.6613	2.6762	0.0149	9466.67	9467.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	172.0	292.7	500.0	<5	N		
	Cloudy	11:08	C219C	2.6391	2.6541	0.0150	9467.67	9468.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	173.1	292.7	500.0	<5	N		
18-Jan-19	Cloudy	09:00	C221A	2.6604	2.6724	0.0120	9492.67	9493.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	138.5	292.7	500.0	<5	N		
	Cloudy	10:04	C221B	2.6542	2.6667	0.0125	9493.67	9494.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	144.3	292.7	500.0	<5	N		
	Cloudy	11:09	C221C	2.6677	2.6791	0.0114	9494.67	9495.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	131.6	292.7	500.0	<5	N		
24-Jan-19	Sunny	09:00	C223A	2.6647	2.6794	0.0147	9519.67	9520.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	169.6	292.7	500.0	<5	N		
	Sunny	10:04	C223B	2.6588	2.6734	0.0146	9520.67	9521.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	168.5	292.7	500.0	<5	N		
	Sunny	11:09	C223C	2.6711	2.6851	0.0140	9521.67	9522.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	161.6	292.7	500.0	<5	N		
30-Jan-19	Fine	09:00	C225A	2.6706	2.6881	0.0175	9546.67	9547.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	202.0	292.7	500.0	<5	N		
	Fine	10:04	C225B	2.6588	2.6761	0.0173	9547.67	9548.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	199.7	292.7	500.0	<5	N		
	Fine	11:08	C225C	2.6613	2.6785	0.0172	9548.67	9549.67	1.00	51	51	51.0	1.44	1.44	1.44	86.65	198.5	292.7	500.0	<5	N		
																Average	154.9						
																Min	96.9						
																Max	202.0						

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-Jan-19
2-Jan-19
3-Jan-19
4-Jan-19
5-Jan-19
6-Jan-19
7-Jan-19
8-Jan-19
9-Jan-19
10-Jan-19
11-Jan-19
12-Jan-19
13-Jan-19
14-Jan-19
15-Jan-19
16-Jan-19
17-Jan-19
18-Jan-19
19-Jan-19
20-Jan-19
21-Jan-19
22-Jan-19
23-Jan-19
24-Jan-19
25-Jan-19
26-Jan-19
27-Jan-19
28-Jan-19
29-Jan-19
30-Jan-19
31-Jan-19
Date
1st Hour
2nd Hour
3rd Hour
Action Level (µg/m3)
Limit Level (µg/m3)


1-Hour TSP Monitoring Result at station: SR77
(October 2018 - January 2019)
TSP Concentration (µg/m3)
600.0
500.0
400.0
300.0
200.0
100.0
0.0
1-Oct-18
8-Oct-18
15-Oct-18
22-Oct-18
29-Oct-18
5-Nov-18
12-Nov-18
19-Nov-18
26-Nov-18
3-Dec-18
10-Dec-18
17-Dec-18
24-Dec-18
31-Dec-18
7-Jan-19
14-Jan-19
21-Jan-19
28-Jan-19
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

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)
				L10(30min)	L90(30min)	Leq(30min)			
2019-01-02	Cloudy	11:15	11:45	88.5	65.5	70.1	-	67.8	75.0
2019-01-08	Cloudy	11:15	11:45	92.0	63.5	64.5	-	67.8	75.0
2019-01-14	Cloudy	11:15	11:45	93.0	62.5	65.5	-	67.8	75.0
2019-01-24	Sunny	11:30	12:00	88.5	64.5	66.0	-	67.8	75.0
2019-01-30	Fine	11:05	11:35	96.0	63.0	69.0	-	67.8	75.0
					Average	67.0			
					Minimum	64.5			
					Maximum	70.1			

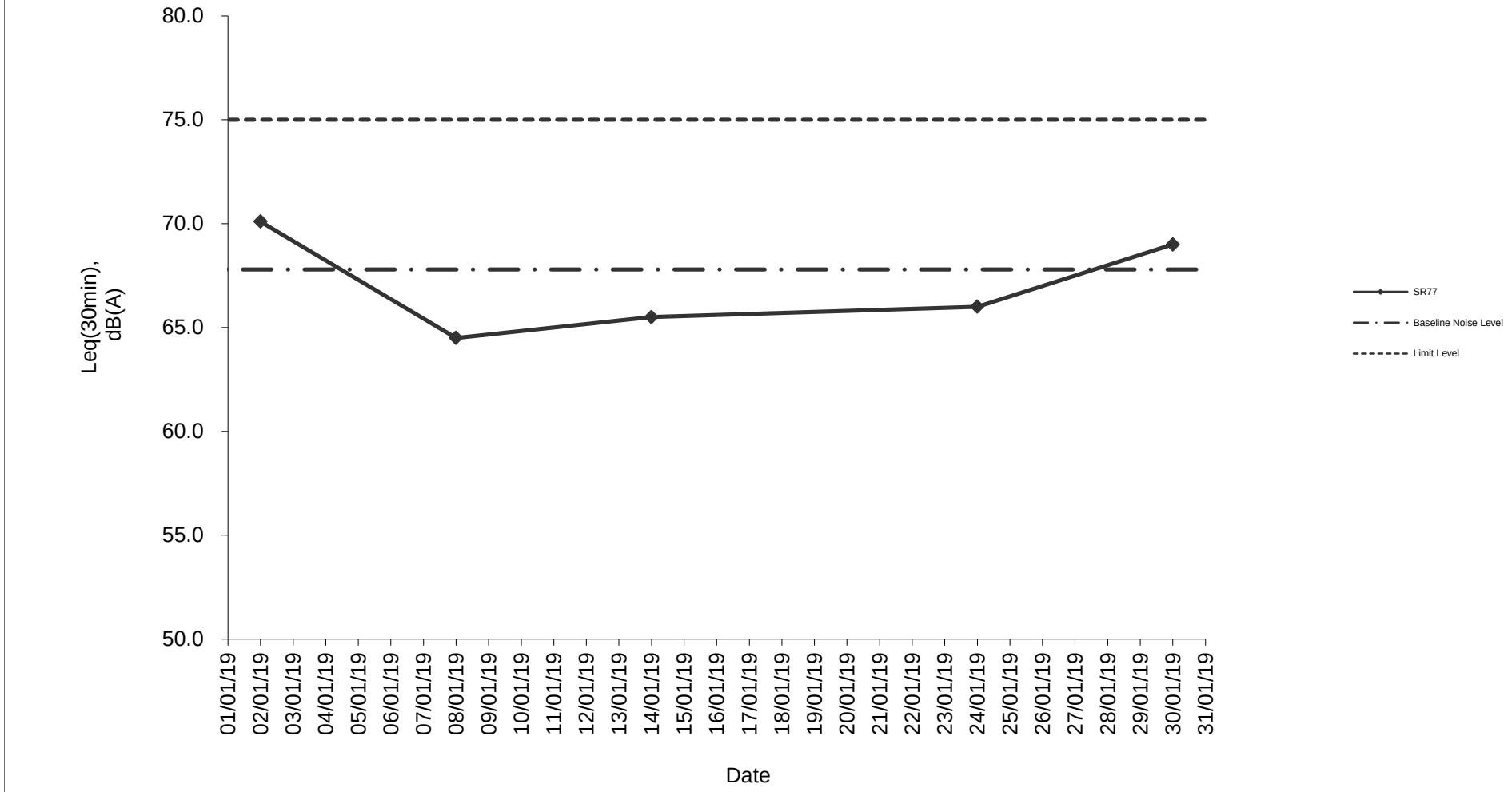
Remarks

* +3dB(A) Façade effect correction included

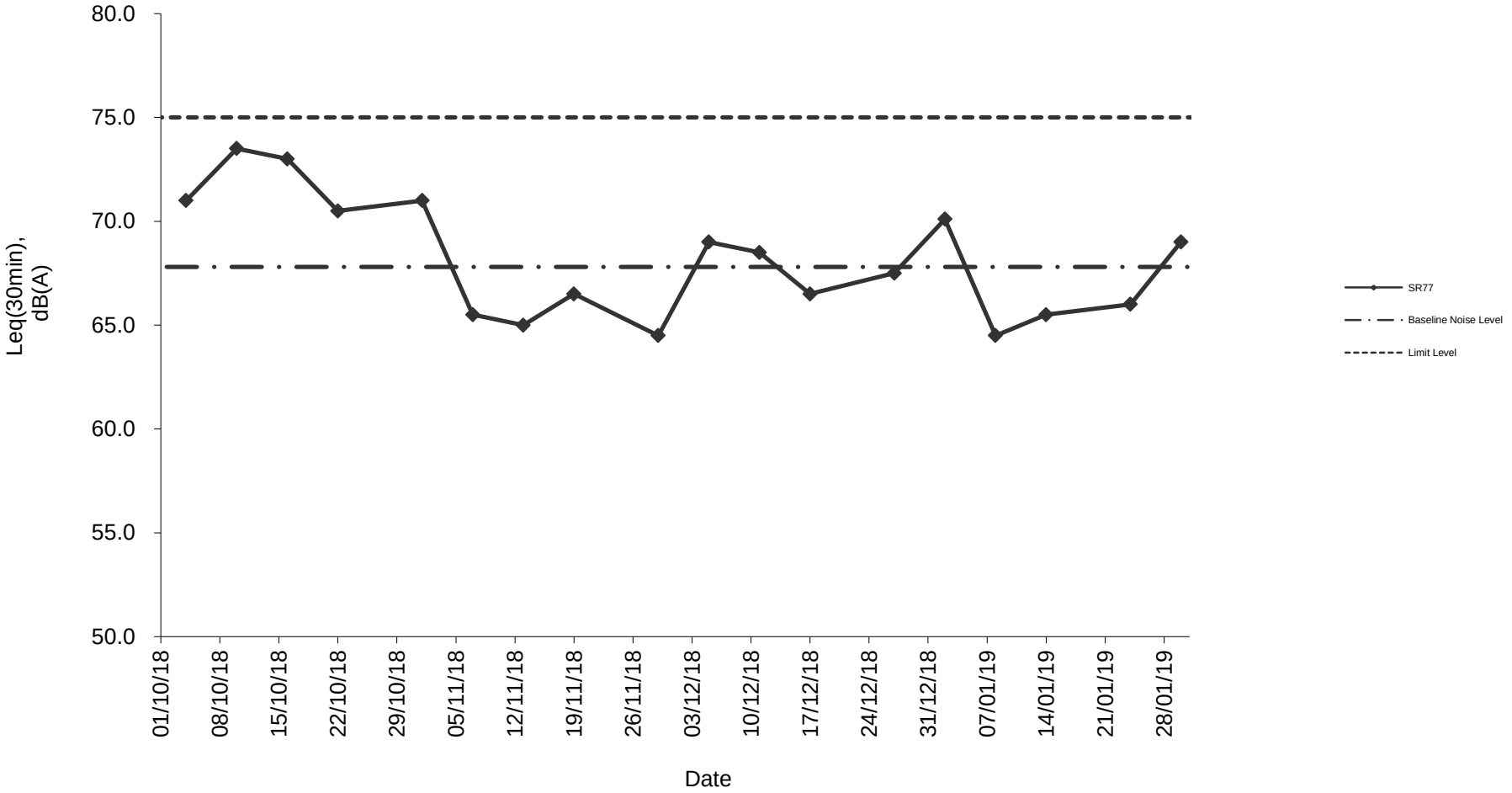
** Baseline corrected level is only calculated when measured noise level (Leq) > limit level.

*** Data in **Bold Underline** denotes exceedance of respective Limit Level

Noise monitoring result: SR77



Noise monitoring result: SR77
(October 2018 - January 2019)



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-19	2.937	0.927	2.010	-	-	2.010	0.997	-	-	-	-	0.145
Feb-19												
Mar-19												
Apr-19												
May-19												
Jun-19												
Sub-Total												
Jul-19												
Aug-19												
Sep-19												
Oct-19												
Nov-19												
Dec-19												
Total												

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.
8. Assume the density of plastic is 941 kg/m^3.
9. Assume the density of paper is 800 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	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓
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	Obs.
	● 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	✓
	● 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.	
C171228	28 December, 2017	1823	Kau Lung Hang and Hong Lok Yuen	Air quality issue nearby Kau Lung Hang and Hong Lok Yuen area. Stockpiling within the Project area was observed to be uncovered, causing dust dispersion within the area. (大埔九龍坑附近的空氣污染問題嚴重。吐露港公路蓮塘口岸隧道工程經常見到沙泥沒有覆蓋，導致沙土飛揚散佈九龍坑，康樂園一帶，造成極大困擾與明顯健康風險。要求立即改善，懲罰相	The Environmental Team (ET) was informed of the complaint through Chun Wo and CEDD via 1823 online-enquiry/ complaint form received on 28 December 2017 at 9:04am. Investigation was triggered in accordance with the procedures as specified in Section 7.3 of the EM&A Manual. A joint investigation by the ET and the IEC was conducted on 28 December 2017. As advised by the Contractor, no construction works were carried out during the public holiday. No exceedance of TSP level at the air monitoring station under this Contract was recorded in the past six months except 8 December 2017.	

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

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

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

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

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