

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

Monthly EM&A Report

January 2018

#### 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 2018)

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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 2018 for the portion of Stage 2 works entrusted to Civil Engineering and Development Department (CEDD) under Contract No. CV/2012/09

12 February 2018 By Fax (2805 5028) & Hand

We refer to the revised Monthly EM&A Report – January 2018 received on 07 February 2018 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

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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 2018. As informed by the Contractor, the major activities in the reporting month were:

- Cable detection and trial trenches:
- Remaining works on new Footbridge;
- Noise barrier construction;
- Roadworks:
- Viaduct segment erection;
- · Water main laying works;
- Installation of Noise barrier steel column & panel;
- Parapet Installation on bridge deck;
- Drainage Work;
- · Mini-pile installation;
- Construction of profile barrier & Planter wall on Bridge deck;
- Stressing of external tendon;
- Waterproofing works on Bridge deck;
- · Stitching works for longitudinal stitch of viaduct; and
- · Construction of retaining walls and backfill.

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

- · Boundary wall for pumping station;
- · Cable detection and trial trenches;
- Installation of noise barrier steel post & panel;
- · Remaining works on new Footbridge;
- Mini-pile installation works;
- Noise barrier construction;
- · Roadworks;
- Viaduct Segment erection;
- Water main laying works;
- Parapet Installation on bridge deck;
- Construction of profile barrier & Planter wall on Bridge deck;
- Drainage Work;
- Stressing of external tendon;
- · Construction of retaining wall and backfill;
- Waterproofing works on Bridge deck;
- · Stitching works for longitudinal stitch of viaduct;
- · Installation of BFA lift; and
- Installation of Sign Gantry.

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 January 2018.

#### 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:
  - Cable detection and trial trenches:
  - Remaining works on new Footbridge;
  - Noise barrier construction;
  - Roadworks;
  - Viaduct segment erection;
  - Water main laying works;
  - Installation of Noise barrier steel column & panel;
  - Parapet Installation on bridge deck;
  - · Drainage Work;
  - Mini-pile installation;
  - Construction of profile barrier & Planter wall on Bridge deck;
  - Stressing of external tendon;
  - Waterproofing works on Bridge deck;
  - Stitching works for longitudinal stitch of viaduct; and
  - · Construction of retaining walls and backfill.
- 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                                    | Senior Resident<br>Engineer       | Mr. Alan Lee          | 2171 3303 | - 2171 3498 |
| AECOM             | Representative                                | Resident Engineer (Environmental) | Mr. Perry Yam         | 2171 3350 | 21/13496    |
| Mott<br>MacDonald | Independent<br>Environmental<br>Checker (IEC) | IEC                               | Mr. Steven Tang       | 2828 5920 | 2827 1823   |
|                   |   | Site Agent                        | Mr. Daniel Ho         | 2638 6144 | 0000 7077   |
| Chun Wo           | Contractor                                    | Environmental Officer             | Ms. Tiffany<br>Tsang  | 2638 6150 | 2638 7077   |
| Meinhardt         | Environmental<br>Team (ET)                    | ET Leader                         | Mr. Fredrick<br>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.              | Valid I     | Period      | Ctatus                    | Domonto   |
|-----------------------------------|-------------|-------------|---------------------------|---|
| / Notification /<br>Reference No. | From        | То          | Status                    | Remarks   |
| Environmental Permi               | t           | I.          |                           | -   |
| EP-324/2008/E                     | 26 Jan 2017 |             | Granted on 26<br>Jan 2017 |   |
| Construction Noise P              | ermit       |             |                           |   |
| GW-RN0477-17                      | 28 Jul 2017 | 5 Jan 2018  | Valid                     | For loading and unloading along Fanling Highway both bounds   |
| GW-RN0500-17                      | 29 Aug 2017 | 24 Feb 2018 | Valid                     | For concreting of stitch construction between AD12 and pier AB11R   |
| GW-RN0501-17                      | 25 Aug 2017 | 24 Feb 2018 | Valid                     | For general works at the northward of site office   |
| GW-RN0508-17                      | 16 Aug 2017 | 15 Feb 2018 | Valid                     | For fuel delivery and tractor with trailer entering the construction site next to MTRC's East Rail Line at Tong Hang Tung |
| GW-RN0549-17                      | 6 Sep 2017  | 5 Mar 2018  | Valid                     | For general works at the southward of site office   |
| GW-RN0564-17                      | 1 Oct 2017  | 31 Mar 2018 | Valid                     | For segment<br>erection crossing<br>over MTRC's Rail<br>Track of Pier<br>AB11 and AD12<br>(1900-2300)                     |
| GW-RN0567-17                      | 10 Sep 2017 | 21 Feb 2018 | Valid                     | For segment erection and traverse stitch joints over Fanling Highway and MTRC's East Rail Line                            |



| Permit / License No.              | Valid       | Period      | 01-1                                  | D   |
|-----------------------------------|-------------|-------------|---------------------------------------|---|
| / Notification /<br>Reference No. | From        | То          | Status                                | Remarks   |
| GW-RN0571-17                      | 30 Sep 2017 | 29 Mar 2018 | Valid                                 | For operating water pumping in jacking pit on Tai Wo Service Road West  |
| GW-RN0669-17                      | 25 Oct 2017 | 7 Apr 2018  | Valid                                 | For installation of prapet at AC5 to AC6  |
| GW-RN0697-17                      | 21 Nov 2017 | 19 May 2018 | Valid                                 | For segment erection, stitches concreting and installation of parapet crossing over Fanling Highway and MTRC's East Rail Line |
| GW-RN0721-17                      | 26 Nov 2017 | 20 May 2018 | Valid                                 | For road marking works in Fanling Highway bothbounds  |
| GW-RN0782-17                      | 8 Dec 2017  | 26 May 2018 | Valid                                 | For Tendon Duct Grouting of AB10/11 and AD11/12 Over MTRC East Rail Line near Tong Hang Tung Chuen                            |
| GW-RN0785-17                      | 19 Dec 2017 | 16 Jun 2018 | Valid                                 | For road diversion and maintenance of Fanling Highway bothbound   |
| GW-RN0786-17                      | 19 Dec 2017 | 18 Jun 2018 | Valid                                 | For lane shifting work of Fanling Highway bothbound   |
| GW-RN0801-17                      | 22 Dec 2017 | 21 Jun 2018 | Valid                                 | For dismantling of catch fence with MTrR protect Zone at Tong Hang Tung Chuen   |
| GW-RN0863-17                      | 17 Jan 2018 | 5 Jul 2018  | Valid                                 | For loading and unloading along Fanling Highway both bounds   |
| Wastewater Discharg               |             | 04.4        | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ |   |
| WT00016832-2013                   | 28 Aug 2013 | 31 Aug 2018 | Valid                                 |   |
| Chemical Waste Prod               |             | on<br>      |                                       |   |
| 5113-634-C3817-01                 | 7 Oct 2013  |             | Valid                                 |   |



| Permit / License No.  | Valid I   | Period      | Status         | Damania |  |  |
|---|---|-------------|----------------|---------|--|--|
| / Notification /<br>Reference No.                                       | From  | То          | Status         | Remarks |  |  |
| Billing Account for Co  | 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   | Tisch Total Suspended Particulate |          |               |
| Sampler       | Mass Flow Controlled High Volume  | 4        | 2250          |
| (1-hr TSP and | Air Sampler (Model No. TE-5170    | '        | 2359          |
| 24-hr TSP)    | MFC)                              |          |               |

- 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:

#### 4.4 Monitoring Parameters, Frequency and Duration

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

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



Table 4.3 Air Quality Monitoring Parameters, Frequency and Duration

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

#### 4.5 Monitoring Methodology

1-hr and 24-hr TSP Monitoring

- 4.5.1 With the consideration of criteria stated in the Updated EM&A Manual, the HVS was installed in the vicinity of the air sensitive receivers.
- 4.5.2 The relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, and any special phenomena observed were recorded. The weather information was referenced from Hong Kong Observatory (http://www.weather.gov.hk/wxinfo/pastwx/extractc.htm).
- 4.5.3 A HOKLAS accredited laboratory with constant temperature and humidity control, and equipped with necessary measuring and conditioning instruments, to handle the 24-hr TSP samples, was employed for sample analysis.
- 4.5.4 Filter papers of size 8"x10" were labelled before sampling. They were inspected to be clean with no pin holes and conditioned in a humidity controlled chamber for over 24-hr and were pre-weighed before use for the sampling.
- 4.5.5 The 24-hr TSP levels were measured by following the standard high volume sampling method for TSP as set out in the Title 40 of the United States Code of Federal Regulations, Chapter 1 (Part 50), Appendix B. TSP was sampled by drawing air through a conditioned, pre-weighted filter paper inside the HVS at a controlled air flow rate. After 24-hr sampling, the filter papers loaded with dust were kept in a clean and tightly sealed plastic bag, and then returned to the laboratory for reconditioning in the humidity controlled chamber followed by accurate weighing by an electronic balance with a readout down to 0.1 mg.
- 4.5.6 All the collected samples were kept in a good condition for 6 months before disposal.
- 4.5.7 For 1-hr TSP monitoring, monitoring methodology is the same as 24-hr TSP monitoring which has been presented in **Section 4.5.1** to **Section 4.5.6**, but with sampling period changed to 1 hour.

#### 4.6 Monitoring Schedule for the Reporting month

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

#### 4.7 Monitoring Results

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



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

Table 4.4 Summary of 1-hr TSP Monitoring Results

| ASR ID      | Average<br>(μg/m³) | Range (μg/m³) | Action Level<br>(μg/m³) | Limit Level<br>(μg/m³) |
|-------------|--------------------|---------------|-------------------------|------------------------|
| AM1(SR77) * | 117.8              | 84.2 – 143.1  | 292.7                   | 500                    |

#### Remark:

Table 4.5 Summary of 24-hr TSP Monitoring Results

| ASR ID      | Average<br>(μg/m³) | Range (μg/m³) | Action Level<br>(μg/m³) | Limit Level<br>(μg/m³) |
|-------------|--------------------|---------------|-------------------------|------------------------|
| AM1(SR77) * | 64.8               | 35.3 – 97.3   | 170.3                   | 260                    |

#### Remark:

- 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**.

<sup>\*</sup> 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

<sup>\*</sup> 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



#### 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<br>Calibrator | Rion (Model No. NC-74) | 1        | 34857296      |
| Sound Level Meter         | Rion (Model No. NL-52) | 1        | 00821072      |

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:

#### 5.4 Monitoring Parameters, Frequency and Duration

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

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



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 recalibration 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<br>Monitoring<br>Station ID | Average,<br>dB(A), Leq<br>(30min) <sup>(2)</sup> | Range, dB(A),<br>Leq (30min) <sup>(2)</sup> | Action Level                                    | Limit<br>Level,<br>dB(A) |
|-----------------------------------|--|---|---|--------------------------|
| M1(SR77) (1)                      | 74.1   | 73.5 – 74.5                                 | When one documented valid complaint is received | 75                       |

#### Remark:

- (1) Station / NSR ID as identified in Updated EM&A Manual / EIA Report for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling
- (2) +3dB(A) façade correction included
- 5.7.2 Major noise sources during the noise monitoring included construction activities of the Project and that along Tai Wo Service Road East, and nearby traffic noise.
- 5.7.3 No noise complaint was received in the reporting month, so no Action Level exceedance was recorded. Also, no Limit Level exceedance of noise monitoring was recorded in the reporting month.
- 5.7.4 The Event and Action Plan for the occurrence of non-compliance of the noise criteria is annexed in **Appendix G**.



#### **6 WATER MONITORING**

6.1.1 The box culvert works 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 3,089m³ of excavated material has been generated. 2,725m³ of inert C&D materials was disposed of at public fill to Tuen Mun Area 38. 60m³ inert C&D materials were reused on site. 150m³ 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, 4 site inspections were carried out on 4, 11, 17 and 25 January 2018. The one held on 25 January 2018 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   |
|--|-------------|---|---|
|  | 28 Dec 2017 | Observation: Watering frequently on unpaved road and construction area. Observation: Enhanced the covering area by impervious material on the stockpiling area.   | The unpaved site area was moist during the site inspection on 4 January 2018.  Stockpiling has been covered with impervious materials during the site inspection on 4 January 2018. |
| Air Quality                            | 25 Jan 2018 | Reminder: Watering shall be enhanced throughout the construction site to prevent dust dispersion. Reminder: Stockpiling to be covered to prevent dust dispersion. | The follow up action will be included in the next monthly EM&A Report.  |
| Noise                                  | N/A         | N/A   | N/A   |
| Water<br>Quality                       | 25 Jan 2018 | Reminder: Preventive measure (i.e. barriers) shall be enhanced to prevent soil/ rock entering the WSD area at NB67.   | The follow up action will be included in the next monthly EM&A Report.  |
| Waste /<br>Chemical<br>Managem-<br>ent | 17 Jan 2018 | Reminder:<br>Chemical drum should be placed<br>on drip tray. General<br>housekeeping at 新東路 is<br>required.   | General housekeeping has been enhanced at 新東路 during the site inspection on 25 January 2018.  |
| Landscape<br>& Visual                  | N/A         | N/A   | N/A   |
| Permits /<br>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 December 2017 | 12 January 2018 |



#### 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 major construction works in the coming reporting month are anticipated to include:
  - Boundary wall for pumping station;
  - · Cable detection and trial trenches;
  - Installation of noise barrier steel post & panel;
  - · Remaining works on new Footbridge;
  - Mini-pile installation works;
  - Noise barrier construction;
  - · Roadworks;
  - · Viaduct Segment erection;
  - Water main laying works;
  - Parapet Installation on bridge deck;
  - Construction of profile barrier & Planter wall on Bridge deck;
  - Drainage Work;
  - Stressing of external tendon;
  - Construction of retaining wall and backfill;
  - Waterproofing works on Bridge deck;
  - · Stitching works for longitudinal stitch of viaduct;
  - Installation of BFA lift; and
  - · Installation of Sign Gantry.

#### 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 Four (4) 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:

#### Air Quality

- Watering within site and vehicle washing facilities shall be enhanced.
- Stockpiling shall be covered coverage with impervious sheeting and/or sufficient water spraying for dust suppression.

#### Water Quality

 Preventive measure shall be enhanced to prevent soil/ rock from engineering the WSD area.

#### Waste

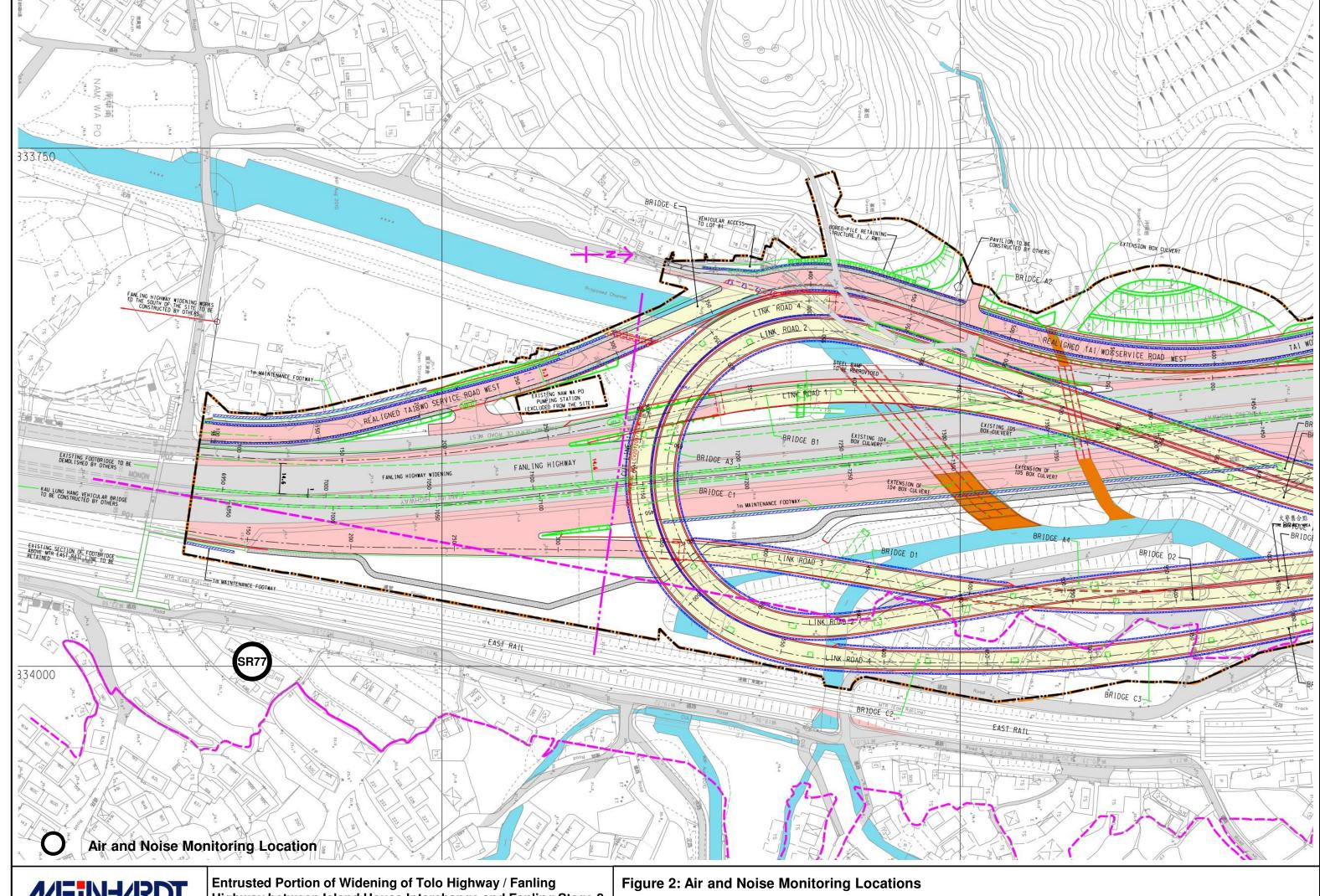
- Chemical drum should be placed on drip tray.
- General housekeeping shall be enhanced throughout the construction site.



### **Figure**

Contract No. CV/2012/09 **俊和建築工程有限公司** Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 CHUN WO CONSTRUCTION & ENGINEERING CO., LTD. SETTING OUT POINTS 833867.6259 837368.5638 833945.6833 837375.1412 C 833721.8117 838310.5250 D 833782.3083 838375.1303 ENGLISHED OF GRACES IS BE TO ME COMO TRUCTED BY OTHERS Works Area for Entrusted Portion CV201209-T-CWC-SK-001g\_AD\_edit.dgn 22/1/2014 17:10:34





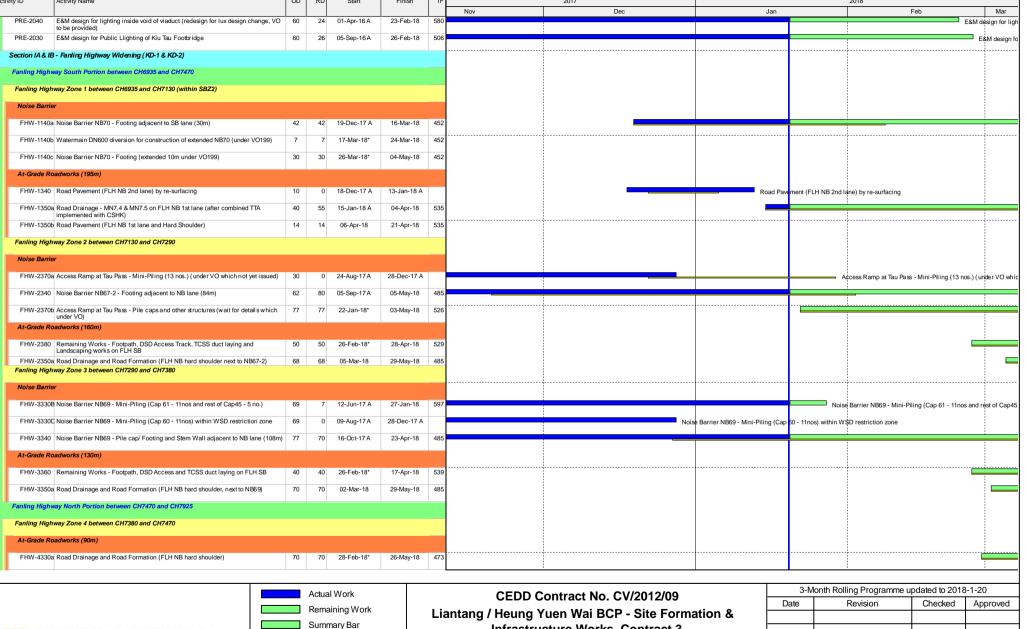
MEIN-ARDT

Highway between Island House Interchange and Fanling Stage 2



## Appendix A Construction Programme

| activity ID   | Activity Name   | OD  | RD      | Start                    | Finish       | nish   TF   2017 |   |                    |  | 2018                    | 2018   |                  |
|---------------|---|-----|---------|--------------------------|--------------|------------------|---|--------------------|--|-------------------------|--|------------------|
|               |   |     |         |                          |              |                  | Nov Dec                                 | Ja                 | 1                                      |                         | Feb  | Mar              |
| Updated Mas   | ster Programme (UMP06A)   |     |         |                          |              |                  |   |                    |  |                         |  |                  |
| Key Dates (Co | ontractual)   |     |         |                          |              |                  |   |                    |  |                         |  |                  |
| KD-0400       | KD4: Section 3 - Remainder of Landscape Softworks not included in Section 3A  | 0   | 0       |                          | 30-Jan-18*   | C                |   |                    | •                                      | KD4: Section 3 - Rema   | ainder of Landscape Soft                         | works not inclu  |
| KD-1200a      | KD9: Stage 1C - Completion of viaduct structures & civil provisions for TCSS (Preliminary EOT by Claim 56 & 58)   | 0   | 0       |                          | 31-Jan-18*   | C                |   |                    |  | KD9: Stage 1C - Con     | npletion of viaduct struct                       | ures & civil pro |
| KD-0100       | KD1: Section 1A - all HyD's entrustment works in Zone3 and SBZ2 excluding<br>Landscape Softworks and Establishment Works                                | 0   | 0       |                          | 05-Feb-18*   | C                |   |                    |  | ♦ KD1: Section          | n 1A - all HyD's entrustm                        | entworksin Z     |
| KD-0300b      | KD3: Section 2 - the remainder of the Works (Contractual)   | 0   | 0       |                          | 05-Feb-18*   | C                |   |                    |  | ♦ KD3: Section          | n 2 - the remainder of th                        | e Works (Conti   |
| Key Dates (Fo | precast)  |     |         |                          |              |                  |   |                    |  |                         |  |                  |
| KD-1205       | KD9: Stage 1C - Completion of viaduct structures and associated civil provisions for TCSS   | 0   | 0       |                          | 31-Jan-18    | C                |   |                    |  | KD9: Stage 1C - Cor     | npletion of viaduct struct                       | ures and assoc   |
| Tentative Han | dover Schedule to TCSS contractor   |     |         |                          |              |                  |   |                    |  |                         |  |                  |
| HS-D2         | Allow access for TCSS contractor to carry out TCSS installation works on Bridge D (from AD 10 to AD14)  | 0   | 0       |                          | 31-Jan-18*   | C                |   |                    |  | Allow access for TCS    | SS contractor to carry ou                        | t TCSS installa  |
| Dependent M   | ilestones from Other Contracts  |     |         |                          |              |                  |   |                    |  | ·                       |  |                  |
| Related to N  | orth Buffer Zone  |     |         |                          |              |                  |   |                    |  |                         |  |                  |
| MS-NBZ140     | Shift existing FLH SB Fast Lane to future FLH 3rd Lane by FHW3 Contractor   | 0   | 0       | 27-Jan-18*               |              | 743              |   |                    | ◆ Shift                                | existing FLH SB Fast La | ane to future FLH 3rd La                         | ne by FHW3 Co    |
| MS-NBZ150     | (NBZ)   | 0   | 0       | 10-Feb-18*               |              | 729              |   |                    |  | -                       | ft existing FLH SB Middle                        |                  |
|               | (NBZ)   |     |         |                          |              |                  |   |                    |  |                         |  | ◆ Shift          |
| MS-NBZ160     | Shift existing FLH SB Slow Lane to future 1st lane by FHW3 Contractor (NBZ)  Shift existing FLH NB Slow Lane to future hard shoulder by FHW3 Contractor | 0   | 0       | 03-Mar-18*<br>18-Mar-18* |              | 708<br>693       |   |                    |  |                         |  |                  |
|               | (NBZ)   | 0   | 0       | 18-Mar-18"               |              | 693              |   |                    |  |                         |  |                  |
| Related to Se | outh Buffer Zone  |     |         |                          |              |                  |   |                    |  |                         |  |                  |
| MS-SBZ180     | Shift existing FLH NB Slow Lane to future FLH 2nd Lane (SBZ)  | 0   | 0       | 14-Jan-18 A              |              |                  |   | ♦ Sh               | ift existing FLH NB Slow               | Lane to future FLH 2nd  | Lane (SBZ)                                       |                  |
| Major Milesto | nes and Events  |     |         |                          |              |                  |   |                    |  |                         |  |                  |
| MS-0220b      | Water Shutdown for Connection of Twin DN1400 Dong Jiang Watermains  | 0   | 0       | 05-Jan-18 A              |              |                  |   | ♦ Water Shutdown f | r Co <mark>n</mark> nection of Twin DN | 1400 Dong Jiang Water   | mains  |                  |
| MS-0220a      | Connection of the diverted twin DN1400 Dong Jiang Watermains (CHE and CHG)  | 11  | 6       | 08-Jan-18 A              | 26-Jan-18    | 525              |   |                    |  |                         |  | - Connection     |
| MS-1090d      | T9d: TTA to shift FLH NB Slow Lane to the Permanent 2nd lane (within SBZ follow   | 1   | 0       | 14-Jan-18 A              | 14-Jan-18 A  |                  |   | I T                | d: TTA to shift FLH NB Sli             | ow Lane to the Permane  | nt 2nd lane (within SBZ                          | follow China S   |
| MS-0320a      | China State)  Diversion on re-aligned TWSRE (1 way Traffic)   | 5   | 5       | 26-Jan-18*               |              | 532              |   |                    | Divers                                 | idn on re-aligned TWSR  | E (1 way Traffic)                                |                  |
| MS-0320b      | Commissioning of re-aligned TWSRE (2 ways Traffic)  | 0   | 0       | 26-Feb-18*               |              | 713              |   |                    |  |                         | •  | Commissionin     |
| MS-1110a      | T11a: TTA to shift FLH NB Slow Lane to Hard Shoulder (within NBZ follow China State)  | 1   | 1       | 18-Mar-18*               | 18-Mar-18    | 120              |   |                    |  |                         |  |                  |
| Major Procur  | ement & Delivery  |     |         |                          |              |                  |   |                    |  | +                       |  |                  |
|               | Kiu Tau Footbridge  |     |         |                          |              |                  |   |                    |  |                         |  |                  |
| MM-4000       |   | 164 | 0       | 29-Mar-17 A              | 15-Jan-18 A  |                  |   |                    |  |                         |  |                  |
|               | Procurement, Fabrication and delivery of Lift   | 104 | 0       | 29-Wal-17 A              | 15-Jan- 16 A |                  |   |                    |  | Procurement,            | Fabrication and delivery                         | / of Lift        |
| Design and S  | ubmissions  |     |         |                          |              |                  |   |                    |  |                         |  |                  |
| Design Conf   | irmation  |     |         |                          |              |                  |   |                    |  |                         |  |                  |
| PRE-1620      | Procument and Deleivery (3 mth) and Installation (1mth) of Permanent Street Lighting  | 92  | 92      | 16-Jan-18 A              | 19-May-18    | -168             |   |                    |  | ;                       |  | ;                |
| PRE-1610      | Approval of Permanent LED Street Lighting (Redesign to suit HyD New Requirements) by HyD  | 0   | 0       |                          | 16-Jan-18 A  |                  |   | •                  | Approval of Permanent                  | LED Street Lighting (Re | design to suit HyD New                           | Requirements)    |
| Method State  | ement and Design (Major) Approved by AECOM  |     |         |                          |              |                  |   |                    |  |                         |  |                  |
|               |   |     |         |                          |              |                  | i i                                     | 1                  |  |                         |  |                  |
|               |   |     | Actua   | l Work                   |              |                  | CEDD Contract No. CV/2012/09            | -                  |  |                         | updated to 2018-1                                |                  |
|               |   |     | Rema    | ining Work               |              | Li               | antang / Heung Yuen Wai BCP - Site Form | ation &            | Date                                   | Revision                | Checked  | Approved         |
|               |   |     | Sumn    | nary Bar                 |              |                  | Infrastructure Works, Contract 3        | -                  |  |                         |  |                  |
|               | 和建築工程有限公司   |     | Critica | I Remaining              | Work         |                  |   | -                  |  |                         |  |                  |
| Сн            | un Wo Construction & Engineering Co., Ltd.  | •   | Milest  | •                        |              |                  | 3-Month Rolling Programme               |                    |  |                         |  |                  |
|               | •   | _   |         | ct Baseline Ba           | ar           | ,                | JMP06APage 1 of 9                       | 20-Jan-18  -       | -                                      |                         |  |                  |
|               |   |     | i rojet |                          | A1           |                  |   | -                  |  |                         | <del>                                     </del> |                  |
|               |   |     |         |                          |              |                  |   | -                  |  |                         | 1  |                  |





|     | Remaining Work          |
|-----|-------------------------|
|     | Summary Bar             |
|     | Critical Remaining Work |
| • • | Milestone               |
|     | Project Baseline Bar    |
|     |                         |

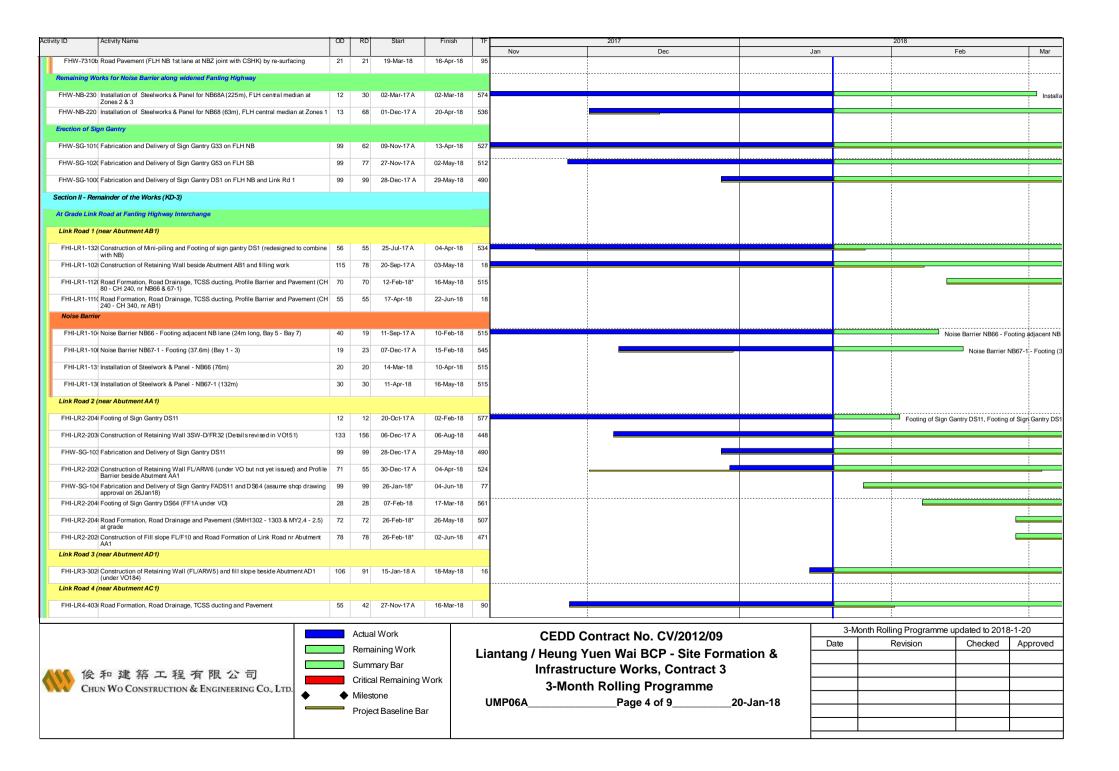
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

3-Month Rolling Programme

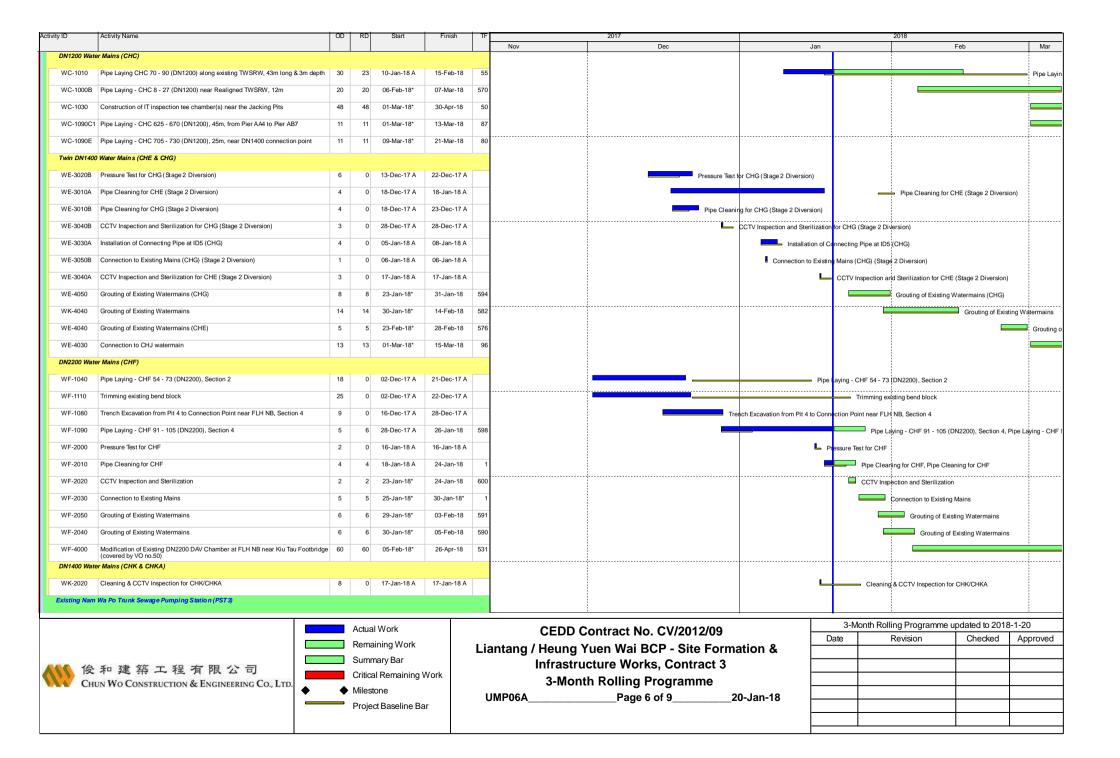
UMP06A Page 2 of 9 20-Jan-18

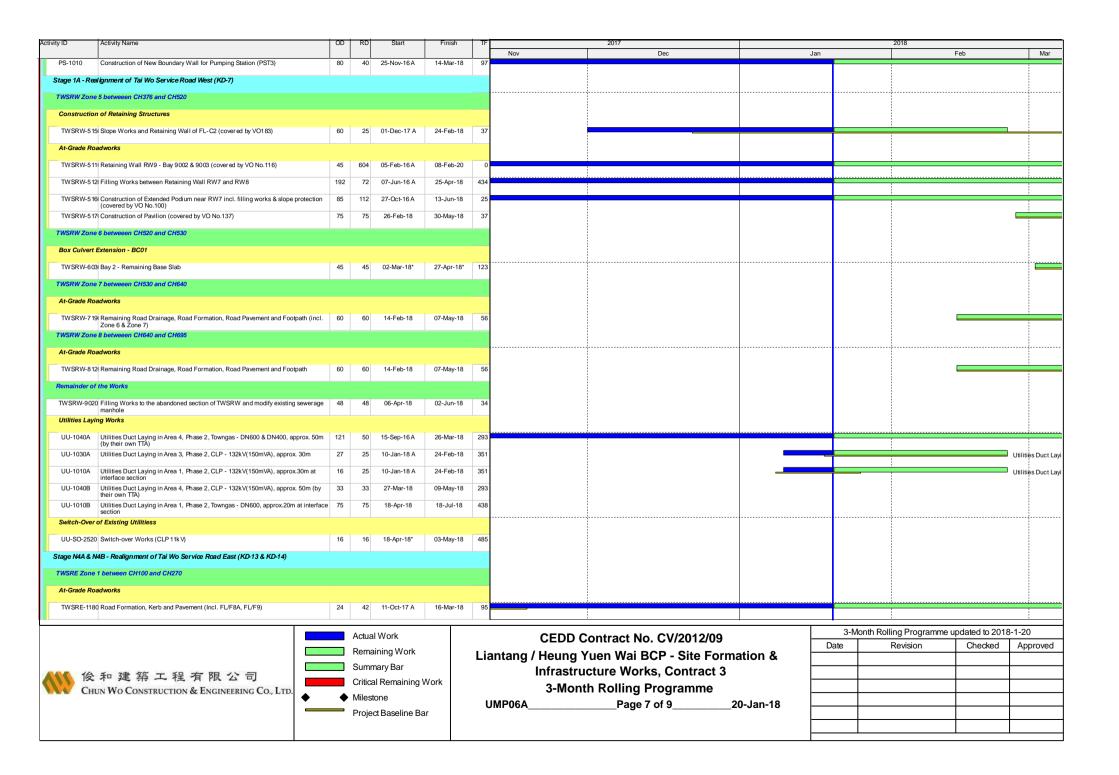
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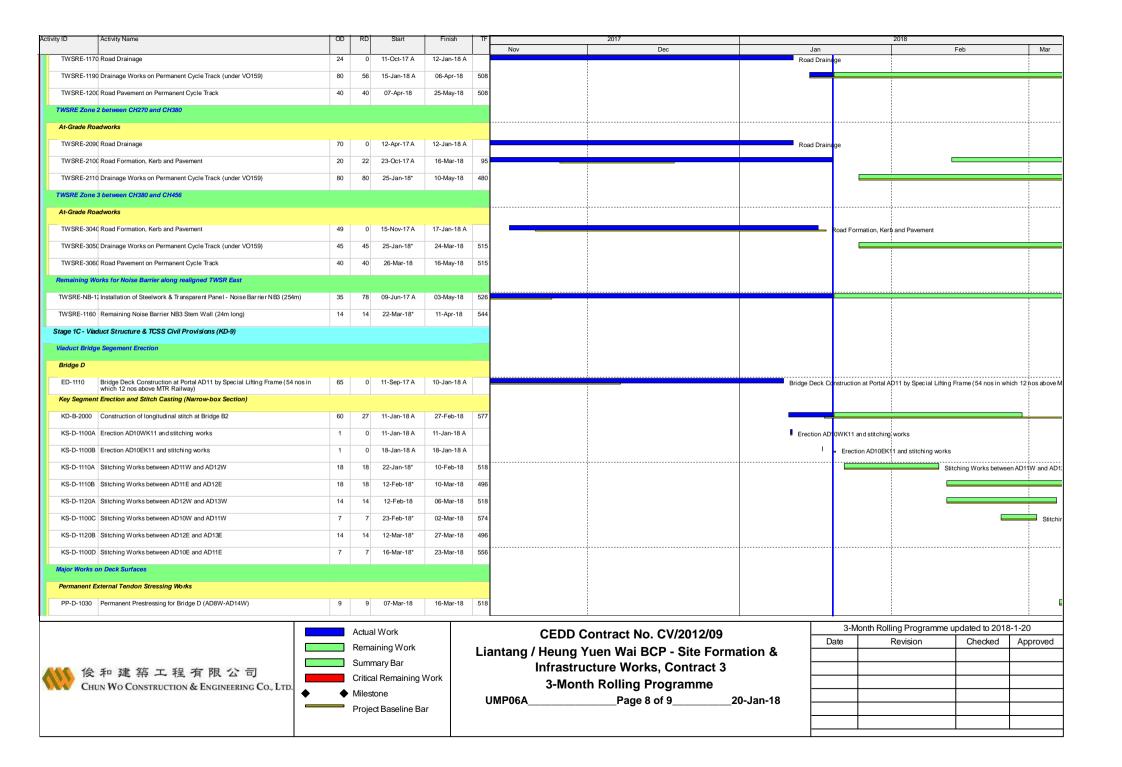
| Activity ID | Activity Name   | OD   | RDI    | Start         | Finish      | l TF | 2017                                    |          |         | 2018              |                 |               |
|-------------|---|------|--------|---------------|-------------|------|---|----------|---------|-------------------|-----------------|---------------|
| ,           |   |      |        |               |             |      | Nov Dec                                 |          | Jan     |                   | Feb             | Mar           |
| FHW-415     | 0a Road Drainage and Road Pavement (FLH SB Hard shoulder and Merging Lane next to NB72)                                     | 140  | 140    | 07-Apr-18     | 21-Sep-18   | 408  |   |          |         |                   |                 |               |
| Noise Bar   |   |      |        |               |             |      |   |          |         |                   |                 |               |
| F18W 400    | On Nation Province NIDOOA - Francisco et acceptat que des (Parcello CO)   | - 50 | 04     | 04 1-1 47 4   | 40 May 40   | 400  |   |          |         |                   |                 |               |
| FHW-422     | 0al Noise Barrier NB68A - Footing at central median (Bay 22 - 23)   | 50   | 91     | 24-Jul-17 A   | 18-May-18   | 499  |   |          |         |                   |                 |               |
| FHW-410     | 0A Noise Barrier NB72 - Footing adjacent to SB lane (Bays 1, 2, 3 & 4)  | 56   | 56     | 02-Feb-18*    | 19-Apr-18   | 408  |   |          |         |                   |                 |               |
| Fanling Hi  | hway Zone 5 between CH7470 and CH7600 (Provision of Kiu Tau Footbridge)   |      |        |               |             |      |   |          |         |                   |                 |               |
| Viu Tou F   | nothridge Penyevisian (Feet)  |      |        |               |             |      |   |          |         |                   |                 |               |
| Kiu Tau F   | potbridge Reprovision (East)  |      |        |               |             |      |   |          |         |                   |                 |               |
| FHW-507     | 0c Laying of Floor Tiles  | 89   | 89     | 27-Feb-18*    | 16-Jun-18   | 489  |   |          |         |                   |                 |               |
| FHW-507     | 0a Installation of Lighting Facilities  | 29   | 29     | 06-Apr-18*    | 10-May-18   | 477  |   |          |         |                   |                 |               |
| EHW 603     | 0b Installation of Drainage Pipe  | 30   | 20     | 18-Apr-18*    | 24-May-18   | 466  |   |          |         |                   |                 |               |
| FHW-507     | ob installation of bramage Pipe   | 30   | 30     | 10-Api-10     | 24-Iviay-10 | 466  |   |          |         |                   |                 |               |
| Provision   | of BFA Facilities (Lift)  |      |        |               |             |      |   |          |         |                   |                 |               |
| FHW-L-      | 0 Lift Delivery and Installation  | 70   | 55     | 08-Jan-18 A   | 04-Apr-18   | 530  |   |          |         | <u> </u>          |                 |               |
| Works of    | existing TWSRE  |      |        |               |             |      |   |          |         |                   |                 |               |
| III         |   |      |        |               |             |      |   |          |         |                   |                 |               |
| FHW-548     | 0a Noise Barrier NB73 Footing Bays 1-6, 10 - 14   | 140  | 62     | 02-Aug-17 A   | 13-Apr-18   | 479  |   |          |         |                   |                 | -             |
| FHW-548     | 0b Noise Barrier NB73 - Mini-Piling and Grouting (CSD: 12 nos)  | 44   | 12     | 04-Jan-18 A   | 02-Feb-18   | 592  |   |          |         | <del>-</del>      |                 |               |
| EHW 640     | Noise Barrier NB72 Bay 5 - 9 (after water shutdown for twin DN1400 WM)  | 73   | 73     | 05-Feb-18*    | 12-May-18   | 518  |   |          |         |                   |                 |               |
| 111W-540    | Noise barrier No72 bay 5 - 9 (alter water shutdown for twill bit 1400 WW)   | 73   | 73     | 03-1 65-16    | 12-Way-10   | 310  |   |          |         |                   |                 |               |
| FHW-550     | <ul> <li>Road Drainage, Road Formation, Pavement and TCSS duct laying (FLH SB<br/>Merging lane and next to NB73)</li> </ul> | 61   | 61     | 08-Feb-18*    | 02-May-18   | 527  |   |          |         |                   |                 | -             |
| FHW-549     | Road Drainage, Road Formation, Pavement and TCSS duct laying (FLH SB)   | 84   | 84     | 26-Mar-18*    | 10-Jul-18   | 471  |   |          |         |                   |                 |               |
| FUN EAG     | Merging lane and next to NB72)  0e Noise Barrier NB73 Footing Bay 8 & 9 (after completion of Bay 1-3 of FR32)               | 42   | 42     | 02 Apr 10*    | 24 May 19   | 500  |   |          |         |                   |                 |               |
| FHW-548     | ue Noise Barrier NB/3 Footing Bay 8 & 9 (after completion of Bay 1-3 of FR32)   | 42   | 42     | 03-Apr-18*    | 24-May-18   | 509  |   |          |         |                   |                 |               |
| FHW-548     | 0d Noise Barrier NB73 Footing Bay 7A & 7B (Access for FR32)   | 19   | 19     | 07-Apr-18*    | 28-Apr-18   | 529  |   |          |         |                   |                 |               |
| At-Grade    | Road Works (130m)   |      |        |               |             |      |   | ·        |         |                   |                 |               |
|             |   | - 00 | 40     | 40 D 47 A     | 47 M 40     | 544  |   |          |         |                   |                 |               |
| FHW-533     | 0a Road Drainage and Road Formation (FLH NB hard shoulder)  | 60   | 43     | 16-Dec-17 A   | 17-Mar-18   | 541  |   |          |         |                   |                 | -             |
| FHW-534     | 0 Fill Replacement Works 3SW-D/F 18 next to FLH NB (fur their modified by VO not yet received)                              | 45   | 45     | 26-Feb-18*    | 23-Apr-18   | 67   |   |          |         |                   |                 | $\overline{}$ |
| FHW-533     | 0b Road Pavement (FLH NB 1st lane and hard shoulder) and TCSS duct laying   | 20   | 20     | 19-Mar-18*    | 14-Apr-18   | 541  |   |          |         |                   |                 |               |
|             |   |      |        |               |             |      |   |          |         |                   |                 |               |
| Fanling Hi  | hway Zone 6 between CH7600 and CH7660 (Existing Vehicular Bridge)   |      |        |               |             |      |   |          |         |                   |                 |               |
| At-Grade    | Roadworks (60m)   |      |        |               |             |      |   |          |         |                   |                 |               |
| FHW-633     | 0a Road Drainage and Road Formation (FLH NB hard shoulder)  | 60   | 43     | 16-Dec-17 A   | 17-Mar-18   | 541  |   |          |         |                   |                 |               |
|             |   |      |        |               |             |      |   |          |         |                   |                 |               |
| FHVV-623    | Demolish Pier of ex-Kiu Tau Vehicular Bridge  | 45   | 45     | 07-Feb-18*    | 11-Apr-18   | 499  |   |          |         |                   |                 | -             |
| FHW-633     | 0b Road Pavement (FLH NB 1st lane and hard shoulder) and TCSS duct laying   | 20   | 20     | 19-Mar-18     | 14-Apr-18   | 541  |   |          |         |                   |                 |               |
| FHW-615     | 0 Road Formation & Pavement (FLH SB Merging lane)   | 60   | 60     | 26-Mar-18     | 09-Jun-18   | 495  |   |          |         |                   |                 |               |
|             |   |      |        |               |             |      |   |          |         |                   |                 |               |
| FHW-623     | 0c Construction of Sign Gantry Footing (west side) G33  | 30   | 30     | 12-Apr-18     | 17-May-18   | 499  |   |          |         |                   |                 |               |
| Fanling Hi  | hway Zone 7 between CH7660 and CH7925   |      |        |               |             |      |   |          |         |                   |                 |               |
| At-Grade    | Roadworks (265m)  |      |        |               |             |      |   |          |         |                   |                 |               |
|             |   | 00   | 40     | 40 D 47 *     | 47.14 10    |      |   |          |         |                   |                 |               |
| FHW-731     | 0a Road Drainage, Road Formation, Pavement and TCSS duct laying (FLH NB hard shoulder)                                      | 60   | 43     | 16-Dec-17 A   | 17-Mar-18   | 94   |   |          |         |                   |                 |               |
|             |   |      |        |               |             |      |   | •        | 2 Month | Dolling Drogramme | indated to 2019 | 1.20          |
|             |   |      | Actua  | l Work        |             |      | CEDD Contract No. CV/2012/09            |          |         | Rolling Programme |                 |               |
|             |   |      | Rema   | ining Work    |             | 11   | antang / Heung Yuen Wai BCP - Site Form | ation &  | Date    | Revision          | Checked         | Approved      |
|             |   |      | Sumn   | nary Bar      |             |      |   | ation a  |         |                   |                 |               |
| 15          | 2 和 建 築 工 程 有 限 公 司   |      |        | I Remaining V | Nork        |      | Infrastructure Works, Contract 3        |          |         |                   |                 |               |
|             | IUN WO CONSTRUCTION & ENGINEERING CO., LTD.   | _    |        | _             | VOIR        |      | 3-Month Rolling Programme               |          |         |                   | 1               |               |
|             | •   |      | Milest |               |             |      |   | 0-Jan-18 |         |                   |                 |               |
|             |   |      | Projec | t Baseline Ba | r           |      |   |          |         |                   |                 |               |
|             |   |      |        |               |             |      |   |          |         |                   |                 |               |
|             |   |      |        |               |             |      |   |          | '       |                   |                 |               |

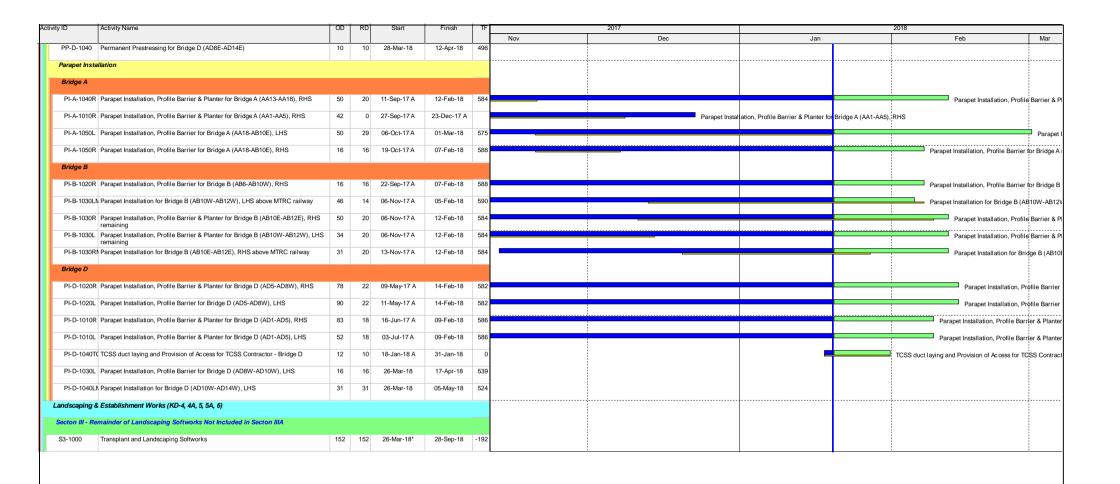


| Activity ID   | Activity Name  | OD  | RD    | Start           | Finish      | į T | F                 | 2017                     |               |                         | 2018                           |                   |                  |
|---------------|--|-----|-------|-----------------|-------------|-----|-------------------|--------------------------|---------------|-------------------------|--------------------------------|-------------------|------------------|
| •             |  |     |       |                 |             |     | Nov               | Dec                      | Ja            |                         | Feb                            |                   | Mar              |
| FHI-LR4-400   | Completion of Connection Works (DN2200) CHF  | 0   | 0     |                 | 30-Jan-18   | 12  | 3                 |                          |               | •                       | Completion of Connection Work  | s (DN2200) CI     | HF               |
| FHI-LR4-404   | Remaining Section of Carriageway connect to FLH  | 65  | 65    | 17-Mar-18       | 07-Jun-18   | 9   | 0                 |                          |               |                         |                                |                   |                  |
| Viaduct - Pav | ement, Street Furnitures, Lighting inside Internal Voids and Others  |     |       |                 |             |     |                   |                          |               |                         |                                |                   |                  |
| RS-1070a      | Waterproofing AC1 - AC9  | 30  | 21    | 01-Dec-17 A     | 13-Feb-18   | 11  | 3                 |                          |               |                         | Waterp                         | proofing AC1 - /  | AC9, Waterproo   |
| RS-1010       | Lightings at Internal Void for Bridge A, B, C and D includes design submission (VO   | 100 | 121   | 05-Dec-17 A     | 25-Jun-18   | 48  | 3                 |                          |               |                         |                                |                   | <del>-</del>     |
| RS-1060a      | to be issued for change of lux) Waterproofing AB1 - AB6  | 10  | 0     | 08-Jan-18 A     | 18-Jan-18 A |     |                   |                          |               | <b>-</b>                | Materproofing AB1 - AB6        |                   |                  |
| RS-1080a      | Waterproofing AD1 - AD7  | 12  | 12    | 20-Jan-18*      | 02-Feb-18   | 12  | 3                 |                          |               |                         | Waterproofing AD1 - AD7        |                   |                  |
| RS-1060b      | Road Pavement AB1 - AB6 (base coarse only)   | 2   | 2     | 24-Jan-18*      | 25-Jan-18   | 13  | 2                 |                          |               | Road P                  | avement AB1 - AB6 (base coarse | only)             |                  |
| RS-1050a      | Waterproofing AA1 - AA18   | 31  | 31    | 02-Feb-18*      | 16-Mar-18   | 8   | 9                 |                          |               |                         |                                |                   |                  |
| RS-1080b      | Road Pavement AD1 - AD7 (base coarse only)   | 2   | 2     | 03-Feb-18*      | 05-Feb-18   | 12  | 3                 |                          |               |                         | Road Pavement AD1              | - AD7 (base co    | parse only)      |
| RS-1000       | MJ Installation and Final Pavement for Bridge A, B, C and D (refer to sub  | 165 | 165   | 05-Feb-18*      | 31-Aug-18   | 42  | 6                 |                          |               |                         |                                |                   |                  |
| RS-1070b      | programme for details) Road Pavement AC1 - AC9 (base coarse only)  | 3   | 3     | 14-Feb-18       | 23-Feb-18   | 11  | 3                 |                          |               |                         |                                | Roi               | ad Pavement AC   |
| RS-1050       | Watermains Laying on Viaduct (under VO171, refer to sub programme for details)   | 158 | 158   | 26-Feb-18*      | 06-Sep-18   | -4  | 6                 |                          |               |                         |                                |                   |                  |
| RS-1020b      | Other Street Furniture including Sign Gantry, NB, Handrail, traffic signs, etc, for  | 100 | 100   | 26-Feb-18*      | 29-Jun-18   | 47  | 9                 |                          |               |                         | ļ                              | <u>-</u>          |                  |
| RS-1050b      | Bridge A, B, C and D  Road Pavement AA1 - AA18 (base coarse only)  | 6   | 6     | 17-Mar-18*      | 23-Mar-18   | 8   | 9                 |                          |               |                         |                                |                   |                  |
| WSD Works     | Treat are in the force of the first of the f |     |       | 17 Mai 10       | 20 Mai 10   |     |                   |                          |               |                         |                                |                   |                  |
| DN450 Fire N  | Inine (CMA)  |     |       |                 |             |     |                   |                          |               |                         |                                |                   |                  |
|               |  |     |       |                 |             |     |                   |                          |               |                         |                                |                   |                  |
| WA-1110       | Pipe Laying - CHA 160 - 270 (DN450) near Ext. TWSRW, 115m  | 44  | 55    | 24-Aug-17 A     | 04-Apr-18   | 3   |                   |                          |               |                         |                                |                   |                  |
| WA-2020       | Pipe Laying - CHA 506 - 564 (DN450) along Ext. TWSRW SB, 32m   | 28  | 21    |                 | 13-Feb-18   | 5   |                   |                          |               |                         | Pipe La                        | aying - CHA 50    | 6 - \$64 (DN450) |
| WA-1030       | Pipe Laying - CHA 135 - 160 (DN450) near Ext. TWSRW, 25m   | 27  | 27    | 16-Jan-18 A     | 27-Feb-18   | 57  |                   |                          |               |                         |                                |                   | Pipe Laying      |
| WA-1010c      | Pipe Laying - CHA 38 - 113 (DN450) near Ext. TWSRW, 20m  | 28  | 28    | 20-Jan-18*      | 28-Feb-18   | 11  |                   |                          |               |                         |                                |                   | Pipe Layin       |
| WA-2080       | Pipe Laying - CHA 624 - 663 (DN450) along Ext TWSRW SB, 39m  | 29  | 29    | 14-Feb-18       | 26-Mar-18   | 11  | 6                 |                          |               |                         |                                |                   |                  |
| WA-1010a      | Pipe Laying - CHA 0 - 20 (DN450) near Ext. TWSRW, 20m  | 28  | 28    | 01-Mar-18       | 06-Apr-18   | 11  | 0                 |                          |               |                         |                                |                   |                  |
| WA-3040       | Pipe Laying - CHA 810 - 835 (DN450) along Ext TWSRW SB, 25m (NBZ)  | 20  | 20    | 09-Apr-18*      | 02-May-18   | 1   | 8                 |                          |               |                         |                                |                   |                  |
| DN600 Water   | Mains (CHB)  |     |       |                 |             |     |                   |                          |               |                         |                                |                   |                  |
| WB-1040       | Pipe Laying - CHB 430 - 455 (DN600) from Pier AB7 to combined valve chamber  | 18  | 0     | 11-Oct-17 A     | 08-Jan-18 A |     |                   |                          | Pipe Laying - | CHB 430 - 455 (DN600) f | rom Pier AB7 to combined valve | hamber            |                  |
| WB-1030C      | Pipe Laying - CHB 410 - 430 (DN600) from Pier AA4 to Pier AB7  | 18  | 0     | 18-Dec-17 A     | 10-Jan-18 A |     |                   |                          | Pipe Lay      | ng - CHB 410 - 430 (DN6 | 000) from Pier AA4 to Pier AB7 |                   |                  |
| WB-1020B      | Pipe Laying - CHB 330 - 349 (DN600) near Pier AA4  | 17  | 17    | 05-Feb-18*      | 02-Mar-18   | 8   | 4                 |                          |               |                         |                                |                   | Pipe La          |
| WB-4000       | Pressure Test for CHB (CHB 360 - 570)  | 7   | 7     | 03-Mar-18       | 10-Mar-18   | 8   | 4                 |                          |               |                         |                                |                   |                  |
| WB-4010       | Cleaning & Sterilization (CHB 360 - 570)   | 9   | 9     | 12-Mar-18       | 21-Mar-18   | 8   | 4                 |                          |               |                         |                                |                   |                  |
| WB-4020       | Water Sampling (CHB 360 - 570)   | 7   | 7     | 22-Mar-18       | 29-Mar-18   | 8   | 4                 |                          |               |                         |                                |                   |                  |
| WB-4030       | Functioning of Newly Laid Pipeline (CHB 360 - 570)   | 0   | 0     |                 | 29-Mar-18   | 8   | 4                 |                          |               |                         |                                |                   |                  |
| WB-4040       | Grouting of Existing Watermains  | 10  | 10    | 03-Apr-18*      | 14-Apr-18   | 54  | 1                 |                          |               |                         |                                |                   |                  |
|               | 1  |     |       |                 | 1           |     |                   | i                        | <u> </u>      | 0.14                    | lline December 11 1            | 1+- 0010 1        |                  |
|               |  |     | Actua | al Work         |             |     | CEDD C            | ontract No. CV/2012/09   | -             |                         | Illing Programme updated       |                   |                  |
|               |  |     | Rema  | aining Work     |             | Li  | iantang / Heung \ | uen Wai BCP - Site Forma | ation &       | Date                    | Revision Ch                    | ecked /           | Approved         |
|               |  |     | Sumi  | mary Bar        |             | _   |                   |                          |               |                         |                                | $\longrightarrow$ |                  |
| 後 後           | 和建築工程有限公司  |     |       | •               | Morle       |     |                   | cture Works, Contract 3  | _             |                         |                                | $\longrightarrow$ |                  |
| Сн            | UN WO CONSTRUCTION & ENGINEERING CO., LTD.   |     |       | al Remaining \  | VVOIK       |     | 3-Mont            | h Rolling Programme      |               |                         |                                |                   |                  |
|               | •  | •   | Miles | stone           |             |     | UMP06A            |                          | 0-Jan-18      |                         |                                |                   |                  |
|               |  | _   | Proie | ect Baseline Ba | ar          |     | OWIFUUM           | Z                        | v-vaii-10  -  |                         |                                |                   |                  |
|               |  |     | , -   |                 |             |     |                   |                          | -             |                         |                                |                   |                  |
|               |  |     |       |                 |             |     |                   |                          |               |                         |                                |                   |                  |













Actual Work

CEDD Contract No. CV/2012/09

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

3-Month Rolling Programme

UMP06A

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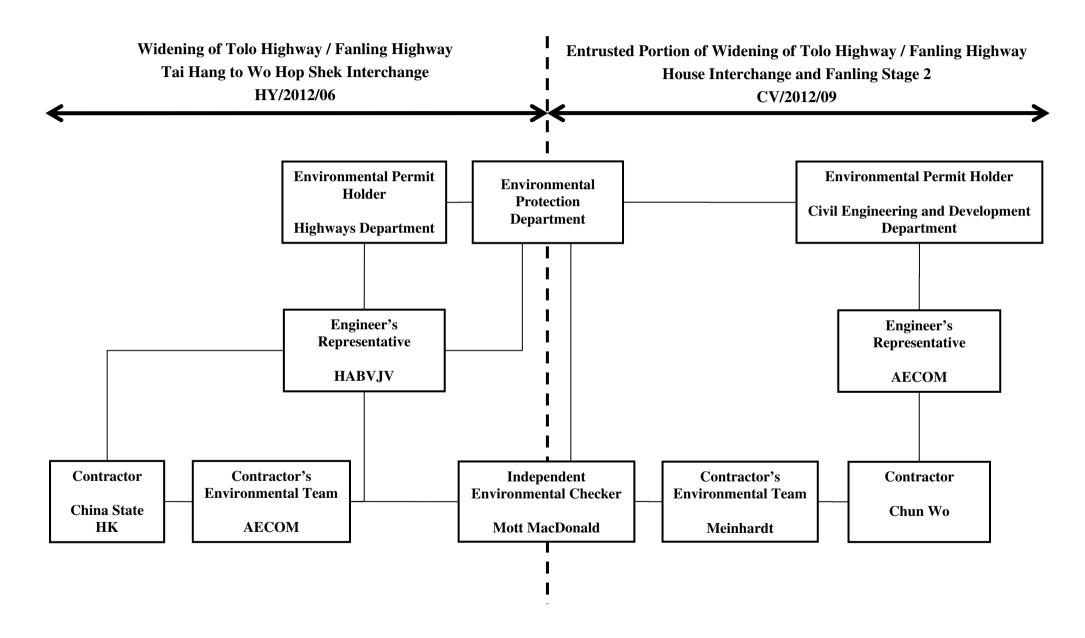
20-Jan-18

| 3-Month Rolling Programme updated to 2018-1-20 |          |         |          |  |  |  |  |  |  |
|--|----------|---------|----------|--|--|--|--|--|--|
| Date   | Revision | Checked | Approved |  |  |  |  |  |  |
|  |          |         |          |  |  |  |  |  |  |
|  |          |         |          |  |  |  |  |  |  |
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|  |          |         |          |  |  |  |  |  |  |
|  |          |         |          |  |  |  |  |  |  |



# Appendix B Project Organization Structure







# Appendix C Calibration Certificates of Monitoring Equipment



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

#### ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

| Date - Feb 28, 2017 Rootsmeter S/N       0438320       Ta (K) - 294         Operator Tisch       Orifice I.D 1941       Pa (mm) - 750.57 |                            |                            |                                      |  |                                  |                                      |  |  |
|--|----------------------------|----------------------------|--------------------------------------|--|----------------------------------|--------------------------------------|--|--|
| PLATE<br>OR<br>Run #   | VOLUME<br>START<br>(m3)    | VOLUME<br>STOP<br>(m3)     | DIFF<br>VOLUME<br>(m3)               | DIFF<br>TIME<br>(min)                          | METER DIFF Hg (mm)               | ORFICE DIFF H20 (in.)                |  |  |
| 1<br>2<br>3<br>4<br>5  | NA<br>NA<br>NA<br>NA<br>NA | NA<br>NA<br>NA<br>NA<br>NA | 1.00<br>1.00<br>1.00<br>1.00<br>1.00 | 1.4600<br>1.0410<br>0.9280<br>0.8840<br>0.7290 | 3.2<br>6.4<br>7.9<br>8.7<br>12.7 | 2.00<br>4.00<br>5.00<br>5.50<br>8.00 |  |  |

#### DATA TABULATION

| Vstd   | (x axis)<br>Qstd                               | (y axis)                                       |       | Va   | (x axis)<br>Qa                                 | (y axis)                                       |
|--|--|--|-------|--|--|--|
| 0.9967<br>0.9925<br>0.9904<br>0.9894<br>0.9840 | 0.6827<br>0.9534<br>1.0672<br>1.1192<br>1.3499 | 1.4149<br>2.0010<br>2.2372<br>2.3464<br>2.8299 |       | 0.9957<br>0.9915<br>0.9894<br>0.9884<br>0.9830 | 0.6820<br>0.9524<br>1.0661<br>1.1181<br>1.3485 | 0.8851<br>1.2517<br>1.3995<br>1.4678<br>1.7702 |
| Qstd slop<br>intercept<br>coefficie            | t (b) =<br>ent (r) =                           | 2.11965<br>-0.02696<br>0.99991                 | n e r | Qa slope<br>intercept<br>coefficie             | t (b) =<br>ent (r) =                           | 1.32729<br>-0.01686<br>0.99991                 |
| y axis =                                       | SQRT[H2O(E                                     | Pa/760)(298/                                   | Га)]  | y axis =                                       | SQRT[H20(                                      | Γa/Pa)]  |

#### CALCULATIONS

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

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

Qa = Va/Time

For subsequent flow rate calculations:

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

#### TSP Sampler Calibration

#### SITE

Location: Lian Tang 3
Sampler: TE-5170 MFC (Serial # : 2359) Date: January 6, 2018 Tech: Sam Wong

#### CONDITIONS Barometric Pressure (in Hg): 39.99 Corrected Pressure (mm Hg): 1016 Temperature (deg F): 70 Temperature (deg K): 294 Average Press. (in Hg): 39.99 Corrected Average (mm Hg): 1016 Average Temp. (deg F): Average Temp. (deg K): 294

#### CALIBRATION ORIFICE

Make: Tisch Qstd Slope: 2.11965 TE-5025A Qstd Intercept: -0.02696 Model: Serial#: Date Certified: February 28, 2017

| CALIBRATIONS       |             |                  |              |                   |                      |         |  |  |
|--------------------|-------------|------------------|--------------|-------------------|----------------------|---------|--|--|
| Plate or<br>Test # | H2O<br>(in) | Qstd<br>(m3/min) | I<br>(chart) | IC<br>(corrected) | LINEAR<br>REGRESSION |         |  |  |
| 1                  | 12.00       | 1.915            | 56.0         | 65.17             | Slope =              | 33.3004 |  |  |
| 2                  | 10.00       | 1.749            | 52.0         | 60.51             | Intercept =          | 2.1322  |  |  |
| 3                  | 8.20        | 1.585            | 48.0         | 55.86             | Corr. coeff.=        | 0.9987  |  |  |
| 4                  | 5.20        | 1.265            | 38.0         | 44.22             |                      |         |  |  |
| 5                  | 3.20        | 0.995            | 30.0         | 34.91             | # 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:

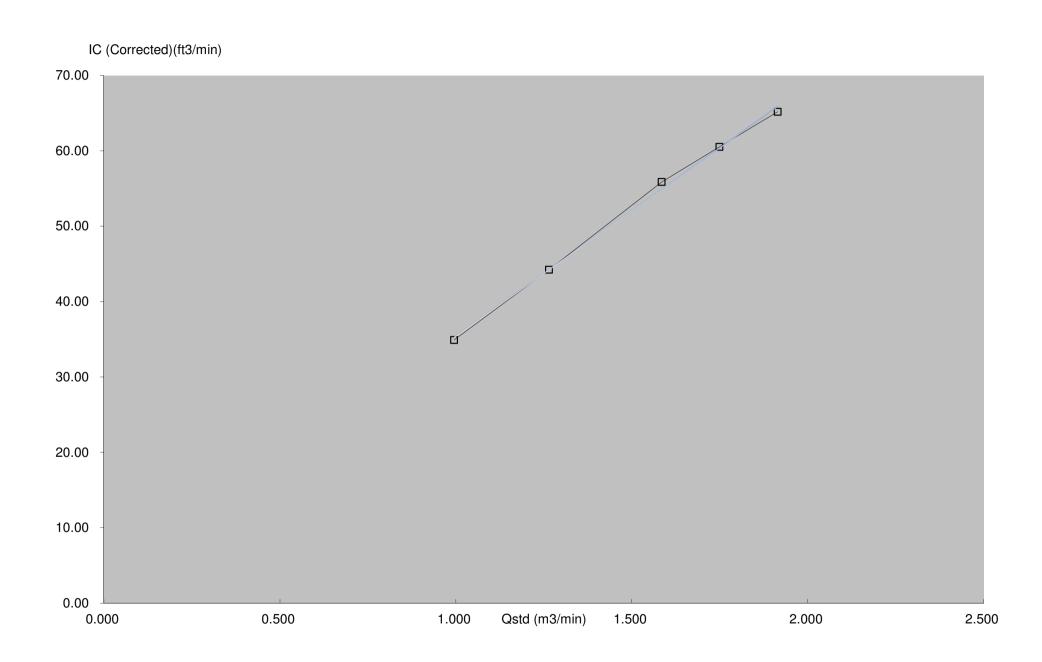
1/m((I)[Sqrt(298/Tav)(Pav/760)]-b)

m

= sampler slope = sampler intercept b

= chart response

Tav = daily average temperature Pav = daily average pressure





# **Calibration Certificate**

| Certificate No. 708774 | 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.: Q73499 Date of receipt : 1-Sep-17

Item Tested

**Description**: Sound Level Calibrator

 Manufacturer : Rion
 I.D.
 : 2159O1

 Model
 : NC-74
 Serial No.
 : 34857296

**Test Conditions** 

Date of Test: 4-Sep-17 Supply Voltage: --

Ambient Temperature :  $(23 \pm 3)^{\circ}$ C Relative Humidity :  $(50 \pm 25)$  %

**Test Specifications** 

Calibration check.

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

#### **Test Results**

All results were within the IEC 60942 Class 1 specification.

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

Main Test equipment used:

| Equipment No. | Description            | Cert. No. | Traceable to        |
|---------------|------------------------|-----------|---------------------|
| S014          | Spectrum Analyzer      | 707126    | NIM-PRC & SCL-HKSAR |
| S240          | Sound Level Calibrator | 703741    | NIM-PRC & SCL-HKSAR |
| S041          | Universal Counter      | 707135    | 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 : |            | Approved by : | F. 1     |  |
|-----------------|------------|---------------|----------|--|
|                 | Elva Chong |               | Alan Chu |  |

Date:

4-Sep-17

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. 708774

Page 2 of 2 Pages

Results:

### 1. Level Accuracy (at 1 kHz)

| UUT Nominal Value | Measured Value | Mfr's Spec. |
|-------------------|----------------|-------------|
| 94 dB             | 94.1 dB        | ± 1 dB      |

Uncertainty :  $\pm$  0.2 dB

### 2. Frequency Accuracy

| UUT Nominal Value | Measured Value | Mfr's Spec. |  |
|-------------------|----------------|-------------|--|
| 1 kHz             | 0.998 kHz      | ± 2 %       |  |

Uncertainty: ± 0.1 %

3. Level Stability: 0.0 dB Uncertainty: ± 0.01 dB

4. Total Harmonic Distortion: < 1.5%

Mfr's Spec. : < 3 %

Uncertainty:  $\pm 2.3$  % of reading

Remarks: 1. UUT: Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. Atmospheric Pressure: 1 025 hPa

----- END -----



| Certificate No. 70877   | 3                    |                      | Page               | e 1 of 3 Pages                 |  |  |  |
|---|----------------------|----------------------|--------------------|--------------------------------|--|--|--|
| Customer: Enovative   | e Environmental Serv | ice Limited          |                    |                                |  |  |  |
| Address : Flat 6, 3/  | F, Block E, Wah Lok  | Industrial Centre, 3 | 31-35 Shan Mei Str | reet, Shatin, N.T., Hong Kong. |  |  |  |
| <b>Order No.</b> : Q73499   |                      |                      | Date of receip     | <b>pt :</b> 1-Sep-17           |  |  |  |
| Item Tested   |                      |                      |                    |                                |  |  |  |
| Description : Sound Le  | evel Meter           |                      |                    |                                |  |  |  |
| Manufacturer : Rion   |                      |                      | I.D.               | :                              |  |  |  |
| Model : NL-52   |                      |                      | Serial No.         | : 00821072                     |  |  |  |
| <b>Test Conditions</b>  |                      |                      |                    |                                |  |  |  |
| Date of Test: 5-Sep-  | 17                   |                      | Supply Voltag      | ge :                           |  |  |  |
| Ambient Temperature :   | (23 ± 3)°C           |                      | Relative Hum       | nidity: (50 ± 25) %            |  |  |  |
| <b>Test Specifications</b>  |                      |                      |                    |                                |  |  |  |
| Calibration check. Ref. Document/Procedure  | e: Z01, IEC 61672.   |                      |                    |                                |  |  |  |
| Test Results  | -                    |                      |                    |                                |  |  |  |
| All results were within the The results are shown in  | • •                  |                      | pecification.      |                                |  |  |  |
| Main Test equipment use   | d:                   |                      |                    |                                |  |  |  |
| Equipment No. Descripti   | <u>on</u>            | Cert. No.            |                    | Traceable to                   |  |  |  |
| S017 Multi-Fur  | nction Generator     | C170120              |                    | SCL-HKSAR                      |  |  |  |
| S240 Sound Lo   | evel Calibrator      | 703741               |                    | 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 : Alan Chu

5-Sep-17

Date:

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. 708773 Page 2 of 3 Pages

#### Results:

1. Self-generated noise: 16.4 dBA (Mfr's Spec ≤ 17 dBA)

2. Acoustical signal test

|            | UUT S     |           |        |            |              |
|------------|-----------|-----------|--------|------------|--------------|
|            | Frequency | Time      | Octave | Applied    | UUT          |
| Range (dB) | Weighting | Weighting | Filter | Value (dB) | Reading (dB) |
| 20-130     | A         | F         | OFF    | 94.0       | 94.1         |
|            |           | S         | OFF    |            | 94.1         |
|            | С         | F         | OFF    |            | 94.1         |
|            | Z         | F         | OFF    |            | 94.1         |
|            | A         | F         | OFF    | 114.0      | 114.1        |
|            |           | S         | OFF    |            | 114.1        |
|            | С         | F         | OFF    |            | 114.1        |
|            | Z         | F         | OFF    |            | 114.1        |

IEC 61672 Type 1 Spec. : ± 1.1 dB

Uncertainty:  $\pm 0.1 \text{ dB}$ 

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

| Frequ | ency | Attenuation ( | (dB)  | IEC 61672 Type 1 Spec.                                       |
|-------|------|---------------|-------|--|
| 31.5  | Hz   | -39.7         |       | - 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, $\pm 1$ dB   |
| 500   | Hz   | -3.2          |       | - 3.2 dB, $\pm$ 1.4 dB                                       |
| 1     | kHz  | 0.0           | (Ref) | $0 \text{ dB}, \pm 1.1 \text{ dB}$                           |
| 2     | kHz  | +1.2          |       | $+$ 1.2 dB, $\pm$ 1.6 dB                                     |
| 4     | kHz  | +1.0          |       | + 1.0 dB, ± 1.6 dB   |
| 8     | kHz  | -1.1          |       | - 1.1 dB, + 2.1 dB $\sim$ -3.1 dB                            |
| 16    | kHz  | -8.0          |       | - $6.6 \text{ dB}$ , $+3.5 \text{ dB} \sim -17.0 \text{ dB}$ |

Uncertainty:  $\pm 0.1 \text{ dB}$ 

# **Calibration Certificate**

Certificate No. 708773

Page 3 of 3 Pages

### 4. Frequency & Time weightings at 1 kHz

4.1 Frequency Weighting (Fast)

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

4.2 Time Weighting (A-weighted)

| UUT            | Applied    | UUT          | Difference | IEC 61672    |
|----------------|------------|--------------|------------|--------------|
| Setting        | Value (dB) | Reading (dB) | (dB)       | 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 028hPa.
- 4. Preamplifier model: NH-25, S/N: 10553
- 5. Microphone model: UC-59, S/N: 07040
- 6. Power Supply Check: OK
- 7. The UUT was adjusted with the supplied 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 February 2018

|     |   |  | February 2018  |   |                            |                                     |
|-----|---|--|--|---|----------------------------|-------------------------------------|
| Sun | Mon   | Tue  | Wed  | Thu   | Fri                        | Sat                                 |
|     |   |  |  | 1<br>ET Site Walk(09:30am –<br>11:00am)   | 2                          | 3                                   |
| 4   | 5   | 6<br>24-hour TSP + 3 x 1-hour<br>TSP, Noise (SR77)         | 7  | 8<br>ET Site Walk(09:30am –<br>11:00am)   | 9                          | 10                                  |
| 11  | 12<br>24-hour TSP + 3 x 1-hour<br>TSP, Noise (SR77) | 13   | 14 ET Site Walk(09:30 am – 11:00 am) with Liantang Project-wide ET and IEC + SSEMC (To be confirmed) | 15<br>24-hour TSP + 3 x 1-hour<br>TSP   | 16<br>Lunar New Year's Day | 17 The second day of Lunar New Year |
| 18  | 19 The fourth day of Lunar New Year                 | 20   | 21<br>24-hour TSP + 3 x 1-hour<br>TSP, Noise (SR77)  | 22 ET SiteW alk(09:30am – 11:00 am) with Fanling Stage 2 IEC & Liantang Project-wide ET and IEC (To be confirmed) | 23                         | 24                                  |
| 25  | 26  | <b>27</b><br>24-hour TSP + 3 x 1-hour<br>TSP, Noise (SR77) | 28   |   | ·                          |                                     |

## Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2 Impact Monitoring & Site Auditing Schedule for January 2018

|        | ,   |   | January 2018   |   |  |          |
|--------|---|---|--|---|--|----------|
| Sunday | Monday  | Tuesday   | Wednesday  | Thursday  | Friday                                       | Saturday |
|        | The First Day of January                            | 2   | 3<br>24-hour TSP + 3 x 1-<br>hour TSP, Noise (SR77)  | 4<br>ET Site Walk(09:30am<br>- 11:00am)   | 5  | 6        |
| 7      | 8   | 9<br>24-hour TSP + 3 x 1-<br>hour TSP, Noise (SR77) | 10   | 11<br>ET Site Walk(09:30am –<br>11:00am)  | 12   | 13       |
| 14     | 15<br>24-hour TSP + 3 x 1-hour<br>TSP, Noise (SR77) | 16  | 17 ET Site Walk(09:30 am – 11:00 am) with Liantang Project-wide ET and IEC + SSEMC (To be confirmed) | 18  | 19<br>24-hour TSP + 3 x 1-hour<br>TSP (SR77) | 20       |
| 21     | 22  | 23  | 24   | ET Site Walk(09:30am – 11:00 am) with Fanling Stage 2 IEC & Liantang Project-wide ET and IEC (To be confirmed) 24-hour TSP + 3 x 1-hour TSP, Noise (SR77) | 26   | 27       |
| 28     | 29  | 30  | 31<br>24-hour TSP + 3 x 1-<br>hour TSP, Noise (SR77)   |   |  |          |



# Appendix E Meteorological Data Extracted from Hong Kong Observatory

# Daily Extract of Meteorological Observations , January 2018

|                     |                           |   | Ho                  | ng Kong O                            | bserva                              | itory                               |                                      |                           | King's<br>Park                         | Waglan Is                                    | iland^                          |
|---------------------|---------------------------|---|---------------------|--------------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|---------------------------|--|--|---------------------------------|
| Day                 | Mean<br>Pressure<br>(hPa) | Air T<br>Absolute<br>Daily<br>Max<br>(deg. C) | Mean<br>(deg.<br>C) | Absolute<br>Daily<br>Min<br>(deg. C) | Mean<br>Dew<br>Point<br>(deg.<br>C) | Mean<br>Relative<br>Humidity<br>(%) | Mean<br>Amount<br>of<br>Cloud<br>(%) | Total<br>Rainfall<br>(mm) | Total<br>Bright<br>Sunshine<br>(hours) | Prevailing<br>Wind<br>Direction<br>(degrees) | Mean<br>Wind<br>Speed<br>(km/h) |
| 01                  | 1020.5                    | 19.0  | 17.3                | 16.3                                 | 13.3                                | 78                                  | 75                                   | 0.0                       | 3.0                                    | ***  | ***                             |
| 02                  | 1019.3                    | 19.2  | 17.8                | 16.0                                 | 13.9                                | 78                                  | 77                                   | 0.0                       | 3.6                                    | ***  | ***                             |
| 03                  | 1018.5                    | 22.0  | 19.4                | 18.2                                 | 14.9                                | 76                                  | 79                                   | 0.0                       | 8.4                                    | ***  | ***                             |
| 04                  | 1016.7                    | 20.5  | 18.8                | 18.1                                 | 15.7                                | 82                                  | 86                                   | 0.2                       | 0.6                                    | ***  | ***                             |
| 05                  | 1015.3                    | 22.8  | 19.3                | 17.2                                 | 17.1                                | 87                                  | 88                                   | 0.2                       | 0.2                                    | ***  | ***                             |
| 06                  | 1014.6                    | 17.3  | 16.2                | 15.9                                 | 15.0                                | 92                                  | 94                                   | 3.7                       | 0.0                                    | ***  | ***                             |
| 07                  | 1014.3                    | 17.6  | 16.8                | 15.7                                 | 15.7                                | 93                                  | 95                                   | 16.2                      | 0.0                                    | ***  | ***                             |
| 08                  | 1015.2                    | 18.7  | 15.1                | 9.5                                  | 14.3                                | 95                                  | 91                                   | 11.6                      | 0.0                                    | ***  | ***                             |
| 09                  | 1023.1                    | 10.7  | 9.0                 | 7.9                                  | 5.9                                 | 82                                  | 97                                   | 9.9                       | 0.0                                    | ***  | ***                             |
| 10                  | 1024.9                    | 15.2  | 12.8                | 10.5                                 | 1.5                                 | 46                                  | 82                                   | Trace                     | 2.9                                    | ***  | ***                             |
| 11                  | 1026.1                    | 16.1  | 13.8                | 12.1                                 | 1.0                                 | 42                                  | 37                                   | Trace                     | 9.3                                    | ***  | ***                             |
| 12                  | 1027.1                    | 15.3  | 12.8                | 10.5                                 | 1.3                                 | 46                                  | 11                                   | 0.0                       | 9.8                                    | ***  | ***                             |
| 13                  | 1026.0                    | 14.6  | 12.9                | 11.3                                 | 6.8                                 | 67                                  | 18                                   | 0.0                       | 9.7                                    | ***  | ***                             |
| 14                  | 1022.9                    | 17.2  | 14.2                | 12.0                                 | 8.7                                 | 70                                  | 11                                   | 0.0                       | 9.9                                    | ***  | ***                             |
| 15                  | 1018.9                    | 18.2  | 15.3                | 13.0                                 | 11.6                                | 79                                  | 16                                   | 0.0                       | 9.6                                    | ***  | ***                             |
| 16                  | 1015.4                    | 22.6  | 17.8                | 14.8                                 | 13.1                                | 75                                  | 23                                   | 0.0                       | 9.6                                    | ***  | ***                             |
| 17                  | 1014.4                    | 25.5  | 19.8                | 15.9                                 | 11.5                                | 60                                  | 9                                    | 0.0                       | 9.8                                    | ***  | ***                             |
| 18                  | 1016.6                    | 24.0  | 19.2                | 15.9                                 | 14.7                                | 76                                  | 39                                   | 0.0                       | 9.0                                    | ***  | ***                             |
| 19                  | 1017.8                    | 19.3  | 18.6                | 17.9                                 | 16.7                                | 89                                  | 92                                   | 0.8                       | 0.0                                    | ***  | ***                             |
| 20                  | 1016.8                    | 22.7  | 19.1                | 17.4                                 | 15.3                                | 79                                  | 70                                   | Trace                     | 7.7                                    | ***  | ***                             |
| 21                  | 1015.6                    | 21.5  | 18.7                | 16.8                                 | 15.3                                | 81                                  | 78                                   | 0.0                       | 4.9                                    | ***  | ***                             |
| 22                  | 1013.9                    | 24.8  | 20.0                | 17.1                                 | 16.3                                | 80                                  | 62                                   | 0.0                       | 8.0                                    | ***  | ***                             |
| 23                  | 1015.3                    | 22.8  | 19.2                | 17.2                                 | 15.3                                | 78                                  | 79                                   | 0.0                       | 4.7                                    | ***  | ***                             |
| 24                  | 1015.5                    | 18.6  | 17.7                | 16.6                                 | 13.8                                | 78                                  | 80                                   | 0.0                       | 7.7                                    | ***  | ***                             |
| 25                  | 1015.7                    | 18.8  | 17.2                | 16.1                                 | 13.4                                | 79                                  | 82                                   | 0.0                       | 5.7                                    | ***  | ***                             |
| 26                  | 1017.2                    | 18.3  | 17.1                | 15.6                                 | 14.5                                | 85                                  | 95                                   | Trace                     | 0.2                                    | ***  | ***                             |
| 27                  | 1017.0                    | 17.1  | 15.5                | 14.0                                 | 12.2                                | 81                                  | 90                                   | Trace                     | 1.6                                    | ***  | ***                             |
| 28                  | 1014.7                    | 18.4  | 16.5                | 12.6                                 | 13.3                                | 81                                  | 88                                   | 0.0                       | 0.0                                    | ***  | ***                             |
| 29                  | 1020.1                    | 12.9  | 10.5                | 8.9                                  | 6.5                                 | 76                                  | 94                                   | 0.1                       | 0.0                                    | ***  | ***                             |
| 30                  | 1020.4                    | 11.0  | 10.1                | 8.9                                  | 7.0                                 | 82                                  | 100                                  | 0.2                       | 0.0                                    | ***  | ***                             |
| 31                  | 1021.0                    | 10.6  | 9.4                 | 7.8                                  | 7.4                                 | 87                                  | 86                                   | 19.3                      | 0.2                                    | ***  | ***                             |
| Mean/Total          | 1018.4                    | 18.5  | 16.1                | 14.1                                 | 11.7                                | 77                                  | 69                                   | 62.2                      | 136.1                                  | ***  | ***                             |
| Normal <sup>§</sup> | 1020.3                    | 18.6  | 16.3                | 14.5                                 | 11.4                                | 74                                  | 61                                   | 24.7                      | 143.0                                  | 060  | 25.3                            |

<sup>\*\*\*</sup> unavailable

Trace means rainfall less than 0.05 mm

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



# 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<br>Date | Weather<br>Condition | Starting<br>Time | Paper No. | W           | Vt. of paper | (g)         | E       | Elapse Tim | е                | Flo     | ow Rate (C | FM)              | Flow    | / Rate (m³/ | /min)            | Total<br>Volume | TSP<br>Concentration | Action<br>Level | Limit<br>Level | Wind<br>speed | Wind<br>direction | NOE | IR |
|------------------|----------------------|------------------|-----------|-------------|--------------|-------------|---------|------------|------------------|---------|------------|------------------|---------|-------------|------------------|-----------------|----------------------|-----------------|----------------|---------------|-------------------|-----|----|
| Dute             | Condition            | Time             |           | Initial Wt. | Final Wt.    | Wt. of Dust | Initial | Final      | Sampling<br>Hour | Initial | Final      | Avg Flow<br>Rate | Initial | Final       | Avg Flow<br>Rate | (m³)            | (µg/m³)              | (µg/m3)         | (µg/m3)        | m/s           | direction         |     |    |
| 3-Jan-18         | Fine                 | 12:11            | CC128     | 2.8619      | 3.0643       | 0.2024      | 7630.67 | 7654.67    | 24.00            | 51      | 51         | 51.0             | 1.44    | 1.44        | 1.44             | 2079.59         | 97.3                 | 170.3           | 260.0          | <5            | N                 |     |    |
| 9-Jan-18         | Cloudy               | 12:12            | CC130     | 2.8888      | 3.0028       | 0.1140      | 7657.67 | 7681.67    | 24.00            | 51      | 51         | 51.0             | 1.44    | 1.44        | 1.44             | 2079.59         | 54.8                 | 170.3           | 260.0          | <5            | N                 |     |    |
| 15-Jan-18        | Sunny                | 12:10            | C484      | 2.8237      | 2.9882       | 0.1645      | 7684.67 | 7708.67    | 24.00            | 51      | 51         | 51.0             | 1.44    | 1.44        | 1.44             | 2079.59         | 79.1                 | 170.3           | 260.0          | <5            | N                 |     |    |
| 19-Jan-18        | Fine                 | 12:11            | C486      | 2.8015      | 2.9612       | 0.1597      | 7711.67 | 7735.67    | 24.00            | 51      | 51         | 51.0             | 1.44    | 1.44        | 1.44             | 2079.59         | 76.8                 | 170.3           | 260.0          | <5            | N                 |     |    |
| 25-Jan-18        | Fine                 | 12:13            | C488      | 2.8839      | 2.9784       | 0.0945      | 7738.67 | 7762.67    | 24.00            | 51      | 51         | 51.0             | 1.44    | 1.44        | 1.44             | 2079.59         | 45.4                 | 170.3           | 260.0          | <6            | N                 |     |    |
| 31-Jan-18        | Cloudy               | 12:10            | C490      | 2.8736      | 2.9470       | 0.0734      | 7765.67 | 7789.67    | 24.00            | 51      | 51         | 51.0             | 1.44    | 1.44        | 1.44             | 2079.59         | 35.3                 | 170.3           | 260.0          | <5            | N                 |     |    |
| ·                |                      |                  |           |             |              |             |         |            |                  |         |            |                  |         |             |                  | Average         | 64.8                 |                 |                |               |                   |     |    |

Min

Max

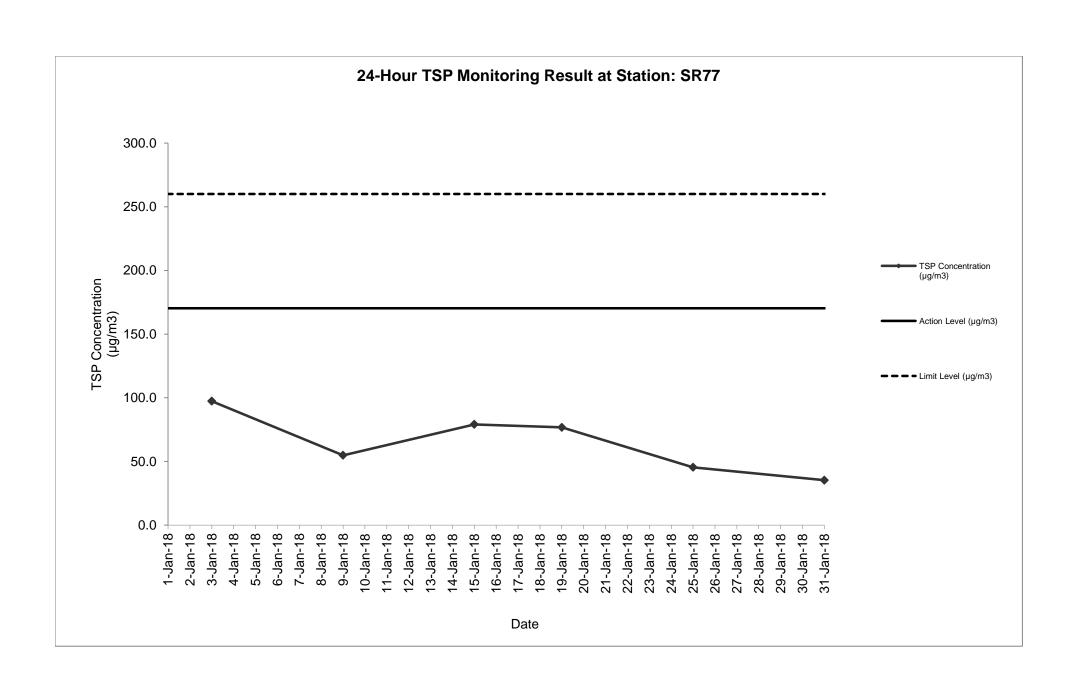
35.3

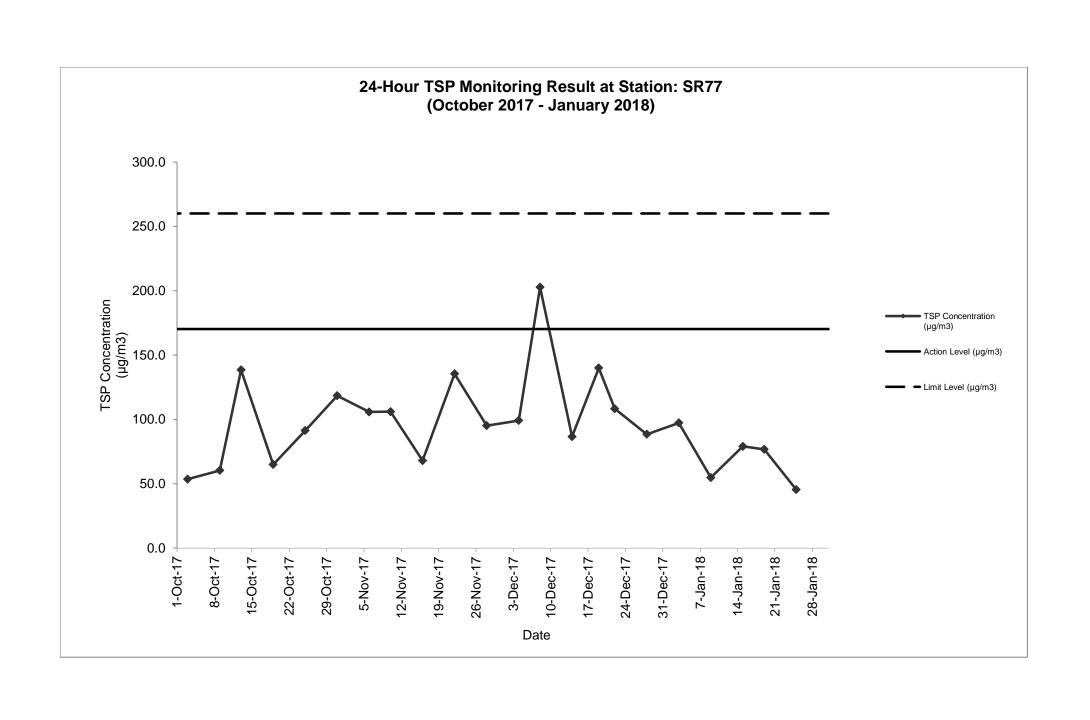
97.3

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





# Appendix F

Air Quality Monitoring Results and their Graphical Presentation

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

|           | Weather<br>Condition | 1 - 1 | Paner No | - Paner No  | Y Paner No I | W           | t. of paper | · (g)   | E                | Elapse Tim | ne    | Flo              | ow Rate (C | FM)   | Flov             | w Rate (m³ | /min)  | Total<br>Volume | TSP<br>Concentratio | Action<br>Level | Limit<br>Level | Wind<br>speed | Wind direction |
|-----------|----------------------|-------|----------|-------------|--------------|-------------|-------------|---------|------------------|------------|-------|------------------|------------|-------|------------------|------------|--------|-----------------|---------------------|-----------------|----------------|---------------|----------------|
| Date      | Condition            | Time  |          | Initial Wt. | Final Wt.    | Wt. of Dust | Initial     | Final   | Sampling<br>Hour | Initial    | Final | Avg Flow<br>Rate | Initial    | Final | Avg Flow<br>Rate | (m³) (μg/  | μg/m³) | (µg/m3)         | (µg/m3)             | m/s             | unection       |               |                |
| 3-Jan-18  | Fine                 | 09:00 | CC129A   | 2.8538      | 2.8657       | 0.0119      | 7627.67     | 7628.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 137.3  | 292.7           | 500.0               | <5              | N              |               |                |
|           | Fine                 | 10:04 | CC129B   | 2.8177      | 2.8301       | 0.0124      | 7628.67     | 7629.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 143.1  | 292.7           | 500.0               | <5              | N              |               |                |
|           | Fine                 | 11:08 | CC129C   | 2.8265      | 2.8381       | 0.0116      | 7629.67     | 7630.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 133.9  | 292.7           | 500.0               | <5              | N              |               |                |
| 9-Jan-18  | Cloudy               | 09:00 | CC131A   | 2.8816      | 2.8909       | 0.0093      | 7654.67     | 7655.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 107.3  | 292.7           | 500.0               | <5              | N              |               |                |
|           | Cloudy               | 10:03 | CC131B   | 2.8591      | 2.8686       | 0.0095      | 7655.67     | 7656.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 109.6  | 292.7           | 500.0               | <5              | N              |               |                |
|           | Cloudy               | 11:08 | CC131C   | 2.8771      | 2.8861       | 0.0090      | 7656.67     | 7657.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 103.9  | 292.7           | 500.0               | <5              | N              |               |                |
| 15-Jan-18 | Sunny                | 09:00 | C485A    | 2.8118      | 2.8236       | 0.0118      | 7681.67     | 7682.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 136.2  | 292.7           | 500.0               | <5              | N              |               |                |
|           | Sunny                | 10:03 | C485B    | 2.8226      | 2.8337       | 0.0111      | 7682.67     | 7683.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 128.1  | 292.7           | 500.0               | <5              | N              |               |                |
|           | Sunny                | 11:08 | C485C    | 2.8143      | 2.8258       | 0.0115      | 7683.67     | 7684.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 132.7  | 292.7           | 500.0               | <5              | N              |               |                |
| 19-Jan-18 | Fine                 | 09:00 | C487A    | 2.7966      | 2.8054       | 0.0088      | 7708.67     | 7709.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 101.6  | 292.7           | 500.0               | <5              | N              |               |                |
|           | Fine                 | 10:02 | C487B    | 2.7840      | 2.7933       | 0.0093      | 7709.67     | 7710.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 107.3  | 292.7           | 500.0               | <5              | N              |               |                |
|           | Fine                 | 11:08 | C487C    | 2.7731      | 2.7821       | 0.0090      | 7710.67     | 7711.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 103.9  | 292.7           | 500.0               | <6              | N              |               |                |
| 25-Jan-18 | Fine                 | 09:00 | C489A    | 2.8783      | 2.8901       | 0.0118      | 7735.67     | 7736.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 136.2  | 292.7           | 500.0               | <7              | N              |               |                |
|           | Fine                 | 10:03 | C489B    | 2.8446      | 2.8561       | 0.0115      | 7736.67     | 7737.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 132.7  | 292.7           | 500.0               | <8              | N              |               |                |
|           | Fine                 | 11:08 | C489C    | 2.8593      | 2.8701       | 0.0108      | 7737.67     | 7738.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 124.6  | 292.7           | 500.0               | <9              | N              |               |                |
| 31-Jan-18 | Cloudy               | 09:00 | C491A    | 2.8715      | 2.8788       | 0.0073      | 7762.67     | 7763.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 84.2   | 292.7           | 500.0               | <10             | N              |               |                |
|           | Cloudy               | 10:03 | C491B    | 2.8554      | 2.8642       | 0.0088      | 7763.67     | 7764.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 101.6  | 292.7           | 500.0               | <11             | N              |               |                |
|           | Cloudy               | 11:08 | C491C    | 2.8498      | 2.8581       | 0.0083      | 7764.67     | 7765.67 | 1.00             | 51         | 51    | 51.0             | 1.44       | 1.44  | 1.44             | 86.65      | 95.8   | 292.7           | 500.0               | <12             | N              |               |                |
|           |                      |       |          |             |              |             |             |         |                  |            |       |                  |            |       |                  | Average    | 117.8  |                 |                     |                 |                |               |                |

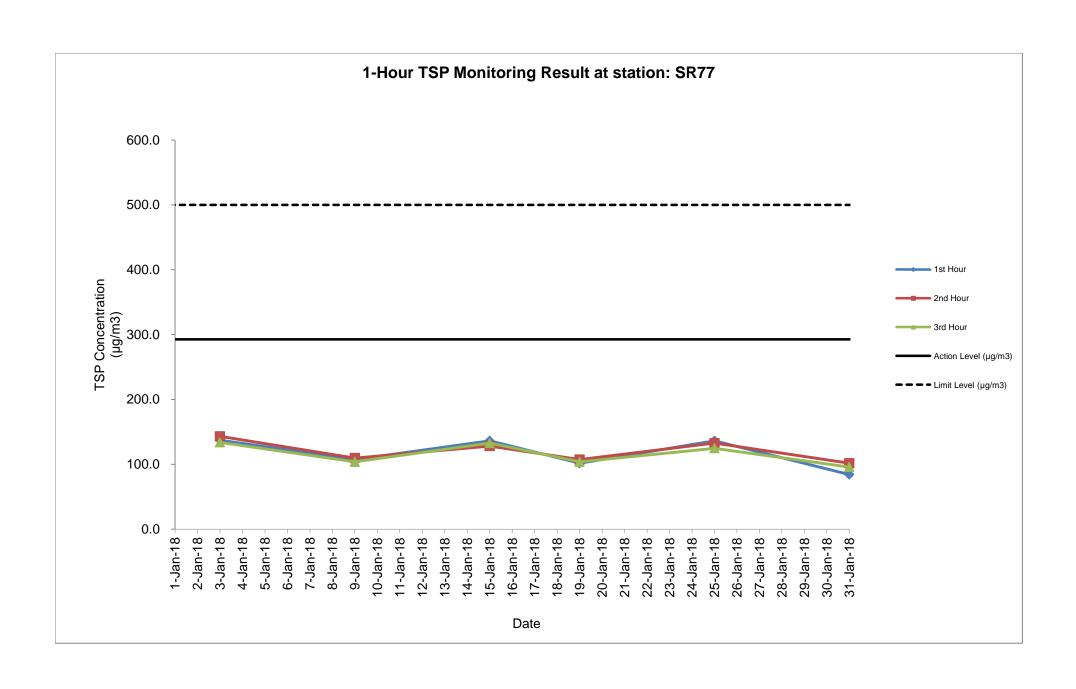
Max

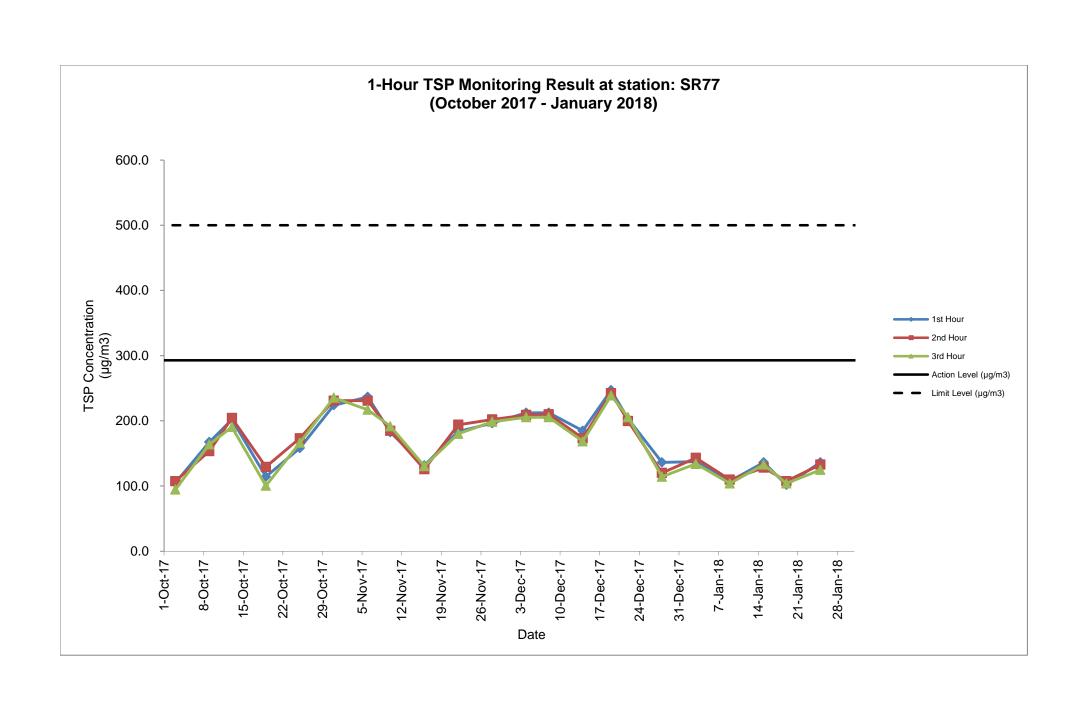
143.1

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







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



| Event   | Action   |  |  |  |
|---|--|--|--|--|
|   | ET Leader  | IEC  | ER   | Contractor   |
| Limit level being exceeded by one sampling day                      | Identify source;     Inform IEC, ER, Contractor and EPD:   | Check monitoring data submitted by ET;     Check Contractor's working  | Confirm receipt of notification of exceedance in writing;      Notific Contractor:   | Take immediate action to avoid further exceedance;     Submit proposels for remadial.  |
|   | 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.  | <ol> <li>Check Contractor's working method;</li> <li>Discuss with ET and Contractor on possible remedial measures;</li> <li>Advise ER on the effectiveness of the proposed remedial measures;</li> <li>Supervise implementation of remedial measures.</li> </ol> | Notify Contractor;     Ensure remedial measures properly implemented.  | <ol> <li>Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Amend proposal if appropriate.</li> </ol>   |
| Limit level being exceeded by two or more consecutive sampling days | <ol> <li>Notify IEC, ER, Contractor, and EPD;</li> <li>Identify source;</li> <li>Repeat measurement to confirm findings;</li> <li>Increase frequency to daily;</li> <li>Analyse Contractor's working procedures to determine possible mitigation to be;</li> <li>Arrange meeting with IEC and ER to discuss the remedial actions to be taken;</li> <li>Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>If exceedance stops, cease additional monitoring.</li> </ol> | Discus amongst ER, ET, and Contractor on the potential remedial actions;     Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise ER accordingly;     Supervise the implementation of remedial measures.             | <ol> <li>Confirm receipt of notification of exceedance in writing;</li> <li>Notify Contractor;</li> <li>In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>Ensure remedial measures properly implemented;</li> <li>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.</li> </ol> | <ol> <li>Take immediate action to avoid further exceedance;</li> <li>Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Resubmit proposals if problem still not under control;</li> <li>Stop the relevant portion of works as determined by ER until the exceedance is abated.</li> </ol> |



### **Event and Action Plan for Noise**

| Event        | Action   |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|              | ET Leader  | IEC  | ER   | Contractor   |  |  |  |  |  |  |  |  |  |  |
| Action Level | <ol> <li>Notify IEC and the Contractor.</li> <li>Carry out investigation.</li> </ol>                           | Review with analysed results submitted by ET.  | Confirm receipt of notification of failure in writing.   | Submit noise mitigation proposals to IEC.                                |  |  |  |  |  |  |  |  |  |  |
|              | Report the results of investigation to IEC and the Contractor.   | Review the proposed remedial<br>measures by the Contractor and<br>advise ER accordingly. | <ol> <li>Notify the Contractor.</li> <li>Require the Contractor to</li> </ol>  | Implement noise mitigation proposals.                                    |  |  |  |  |  |  |  |  |  |  |
| 5            | Discuss with the Contractor and formulate remedial measures.   | Supervise the implement of remedial measures.  | ,  |  |  |  |  |  |  |  |  |  |  |  |
|              | 5. Increase monitoring frequency to check mitigation effectiveness.  | remediai measures.   | Ensure remedial measures are properly implemented.   |  |  |  |  |  |  |  |  |  |  |  |
| Limit Level  | Notify IEC, ER, EPD and the Contractor.  | Discuss amongst ER, ET Leader and the Contractor on the                                  | Confirm receipt of notification of failure in writing.   | Take immediate action to avoid further exceedance.                       |  |  |  |  |  |  |  |  |  |  |
| 2.           | 2. Identify the source.  | potential remedial actions.  | 2. Notify the Contractor.  | 2. Submit proposals for remedial   |  |  |  |  |  |  |  |  |  |  |
|              | Repeat measurement to confirm findings.  | Review the Contractor's remedial actions whenever necessary to                           | Require the Contractor to propose remedial measures for  | actions to IEC within 3 working days of notification.                    |  |  |  |  |  |  |  |  |  |  |
|              | 4. Increase monitoring frequency.  | assure their effectiveness and advise ER accordingly.                                    | the analysed noise problem.  | 3. Implement the agreed proposals.                                       |  |  |  |  |  |  |  |  |  |  |
|              | Carry out analysis of Contractor's working procedures to determine   | Supervise the implementation of remedial measures.                                       | Ensure remedial measures are properly implemented.   | Resubmit proposals if problem still not under control.                   |  |  |  |  |  |  |  |  |  |  |
|              | possible mitigation to be implemented.   | remediai measures.   | 5. If exceedance continues, consider what activity of the  | 5. Stop the relevant activity of works as determined by the ER until the |  |  |  |  |  |  |  |  |  |  |
|              | <ol><li>Inform IEC, ER, and EPD the<br/>causes &amp; actions taken for the<br/>exceedances.</li></ol>          |  | work is responsible and instruct<br>the Contractor to stop that activity<br>of work until the exceedance is<br>abated. | exceedance is abated.  |  |  |  |  |  |  |  |  |  |  |
|              | 7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and ER informed of the results. |  | abated.  |  |  |  |  |  |  |  |  |  |  |  |
|              | If exceedance stops, cease additional monitoring.  |  |  |  |  |  |  |  |  |  |  |  |  |  |



**Event and Action Plan for Water Quality** 

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



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



# Appendix H Noise Monitoring Results and their Graphical Presentation

## Appendix H Noise Monitoring Results and their Graphical Presentation

Noise Monitoring Result at SR77

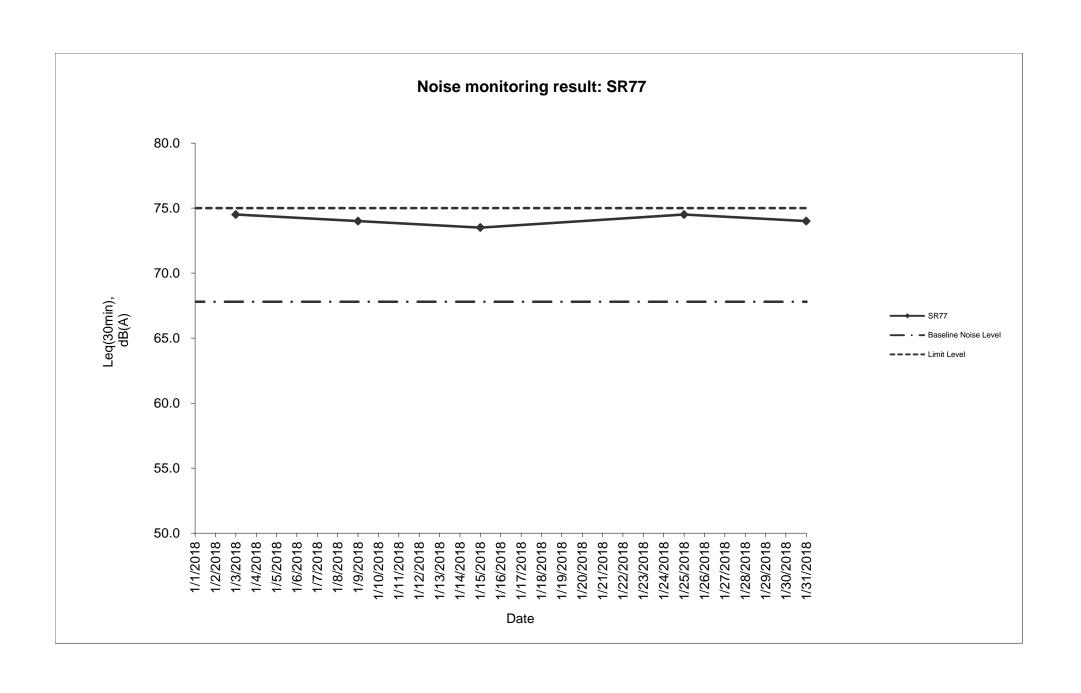
| Date       | Weather   | Start | End   | Measure    | ed Noise Level | (dB(A))*   | Baseline Corrected | Baseline Noise Level | Limit Level | Exceedance |
|------------|-----------|-------|-------|------------|----------------|------------|--------------------|----------------------|-------------|------------|
|            | Condition | Time  | Time  | L10(30min) | L90(30min)     | Leq(30min) | Level, dB(A)**     | (dB(A)), Leq(30min)  | dB(A)       | (Y / N)    |
| 2018/01/03 | Fine      | 11:00 | 11:30 | 97.0       | 60.0           | 74.5       | -                  | 67.8                 | 75.0        | N          |
| 2018/01/09 | Cloudy    | 11:30 | 12:00 | 91.0       | 63.5           | 74.0       | -                  | 67.8                 | 75.0        | N          |
| 2018/01/15 | Sunny     | 11:30 | 12:00 | 93.0       | 61.0           | 73.5       | -                  | 67.8                 | 75.0        | N          |
| 2018/01/25 | Fine      | 11:30 | 12:00 | 91.5       | 60.5           | 74.5       | -                  | 67.8                 | 75.0        | N          |
| 2018/01/31 | Cloudy    | 11:30 | 12:00 | 90.0       | 65.0           | 74.0       | -                  | 67.8                 | 75.0        | N          |

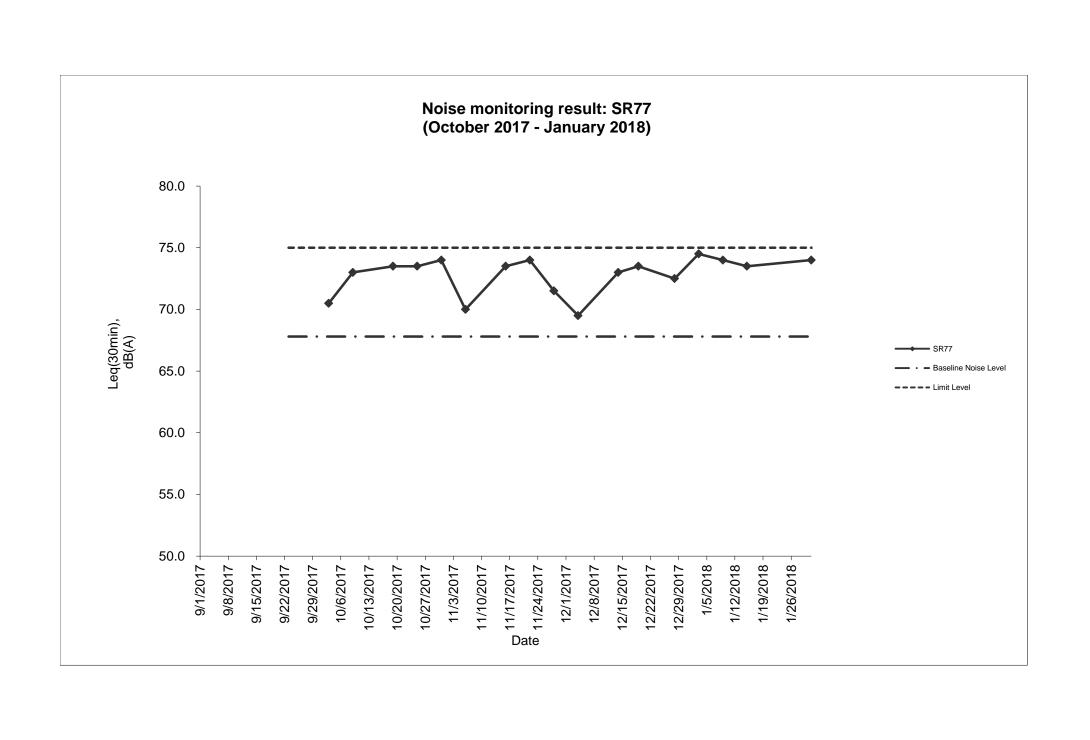
| Average | 74.1 |
|---------|------|
| Minimum | 73.5 |
| Maximum | 74.5 |

#### Remarks

<sup>\* +3</sup>dB(A) Façade effect correction included

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







# Appendix K Waste Flow Table

#### **Monthly Summary Waste Flow Table**

|           |                          | Actual 0                 | Quantities of In         | ert C&D Materi           | als Generated            | Monthly                  |                          | Actual                   | Quantities of            | C&D Wastes               | Generated N          | <b>Monthly</b>           |
|-----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------|--------------------------|
|           |                          | Hard Rock                |                          |                          |                          |                          |                          |                          | Paper/                   |                          |                      |                          |
|           | Total                    | and Large                |                          | Soil Reused              | Soil Reused              |                          |                          |                          | cardboard                |                          |                      | General                  |
|           | Quantity                 | Broken                   |                          | in the                   | in other                 | Soil Disposed            |                          |                          | packaging                |                          | Chemical             | Refuse                   |
| Month     | Generated                | Concrete                 | Soil                     | Contract                 | Projects                 | as Public Fill           | Imported Fill            | Metals                   | (Note 3)                 | Plastics                 | Waste                | (Note 2)                 |
| Unit      | (in '000m <sup>3</sup> ) | (in m <sup>3</sup> ) | (in '000m <sup>3</sup> ) |
| Jan-18    | 3.089                    | 0.304                    | 2.785                    | 0.060                    | -                        | 2.725                    | 0.923                    | -                        | -                        | -                        | -                    | 0.150                    |
| Feb-18    | -                        |                          | 1                        |                          | -                        |                          |                          |                          |                          |                          |                      |                          |
| Mar-18    |                          |                          | -                        |                          | -                        |                          |                          |                          |                          |                          |                      |                          |
| Apr-18    |                          |                          | -                        |                          | -                        |                          |                          |                          |                          |                          |                      |                          |
| May-18    |                          |                          | -                        |                          | -                        |                          |                          |                          |                          |                          |                      |                          |
| Jun-18    |                          |                          | -                        |                          |                          |                          |                          |                          |                          |                          |                      |                          |
| Sub-Total | 3.089                    | 0.304                    | 2.785                    | 0.060                    | -                        | 2.725                    | 0.923                    | -                        | -                        | -                        | -                    | 0.150                    |
| Jul-18    | -                        |                          | -                        |                          | -                        |                          |                          |                          |                          |                          |                      |                          |
| Aug-18    | -                        |                          | -                        |                          | -                        |                          |                          |                          |                          |                          |                      |                          |
| Sep-18    |                          |                          | -                        |                          | -                        |                          |                          |                          |                          |                          |                      |                          |
| Oct-18    | -                        |                          | -                        |                          |                          |                          |                          |                          |                          |                          |                      |                          |
| Nov-18    |                          |                          | -                        |                          | -                        |                          |                          |                          |                          |                          |                      |                          |
| Dec-18    |                          |                          | -                        |                          | -                        |                          |                          |                          |                          |                          |                      |                          |
| Total     | 3.089                    | 0.304                    | 2.785                    | 0.060                    | -                        | 2.725                    | 0.923                    | -                        | -                        | -                        | -                    | 0.150                    |

Note:

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



### Appendix L Implementation Schedule of Environmental Mitigation Measures (EMIS)



| Impact                          | Environmental Protection Measures  | Timing              | Responsibility | Implementation<br>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.  | During Construction | Contractor     | <b>✓</b>                   |
|                                 | • All stockpiles of excavated materials or spoil of more than 50m <sup>3</sup> shall be enclosed, covered or dampened during dry or windy conditions.  |                     |                | Rem.                       |
|                                 | Effective water sprays shall be used to control potential dust emission sources such as unpaved haul roads and active construction areas.  |                     |                | Rem.                       |
|                                 | 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.  |                     |                | <b>✓</b>                   |
|                                 | 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.  |                     |                | <b>✓</b>                   |
|                                 | Vehicle washing facilities shall be provided to minimise the quantity of material deposited on public roads.   |                     |                | ✓                          |
| 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.  | During Construction | Contractor     | <b>√</b>                   |
|                                 | Reduce the number of equipment and their percentage on-time.   |                     |                | <b>✓</b>                   |
| Noise during Operation          | Not required   | N/A                 | N/A            | N/A                        |
| Water Quality                   |  |                     |                | <b>-</b>                   |
| Water Quality during            | Road Widening Works, Earthworks and Culvert Extension Works  |                     |                |                            |
| Construction                    | 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     | <b>✓</b>                   |



| Impact                               | Environmental Protection Measures   | Timing              | Responsibility | Implementation<br>Status # |
|--------------------------------------|---|---------------------|----------------|----------------------------|
|                                      | Sand traps, oil interceptors and other pollution prevention installations should<br>be provided, properly cleaned and maintained.   |                     |                | <b>✓</b>                   |
|                                      | <ul> <li>Runoff from exposed working areas, unfinished slopes and from unlined<br/>temporary channels should be directed to stilling basins and/or silt traps<br/>before discharging to the drainage outfalls.</li> </ul> |                     |                | Rem.                       |
|                                      | 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<br>Operation    | Not required  | N/A                 | N/A            | N/A                        |
| Waste Management                     |   |                     |                |                            |
| Waste Management during Construction | General Waste   |                     |                |                            |
| Constituction                        | Transport of wastes off site as soon as possible.   | During Construction | Contractor     | <b>✓</b>                   |
|                                      | 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.   |                     |                | ✓                          |
|                                      | Vegetation from site clearance  |                     |                |                            |
|                                      | 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.   |                     |                | <b>✓</b>                   |



| Impact | Environmental Protection Measures  | Timing              | Responsibility | Implementation<br>Status # |
|--------|--|---------------------|----------------|----------------------------|
|        | Demolition Wastes  |                     |                |                            |
|        | Segregation of materials to facilitate disposal.   | During Construction | Contractor     | ✓                          |
|        | Appropriate stockpile management.  |                     |                | ✓                          |
|        | Excavated Materials  |                     |                |                            |
|        | 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                        |
|        | Construction Wastes  |                     |                |                            |
|        | Segregation of materials to facilitate recycling/reuse (within designated area in appropriate containers/stockpiles).                    | During Construction | Contractor     | <b>✓</b>                   |
|        | 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)  |                     |                | <b>✓</b>                   |
|        | • For material which cannot be re-used/recycled, collection should be carried out by an approved waste contractor for landfill disposal. |                     |                | <b>✓</b>                   |
|        | Bentonite Slurries   |                     |                |                            |
|        | Bentonite slurries should be reused as far as possible.  | During Construction | Contractor     | N/A                        |
|        | Disposal in accordance with Practice Note For Professional Persons<br>ProPECC PN 1/94.   |                     |                | N/A                        |
|        | Chemical Wastes  |                     |                |                            |
|        | Storage within locked, covered and bunded area.  | During Construction | Contractor     | Rem.                       |
|        | The storage area shall not be located adjacent to sensitive receivers e.g. drains.   |                     |                | <b>✓</b>                   |
|        | Minimise waste production and recycle oils/solvents where possible.  |                     |                | <b>✓</b>                   |

Notes (\*):

✓ - Compliance; Rem - Reminder; Obs - Observation; N/C - Non Compliance; N/A - Not Applicable



| Impact                               | Environmental Protection Measures   | Timing              | Responsibility | Implementation<br>Status # |
|--------------------------------------|---|---------------------|----------------|----------------------------|
|                                      | • A spill response procedure shall be in place and absorption material available for minor spillages.   |                     |                | <b>✓</b>                   |
|                                      | Use appropriate and labelled containers.  |                     |                | ✓                          |
|                                      | Educate site workers on site cleanliness/waste management procedures.   |                     |                | <b>✓</b>                   |
|                                      | • 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.  |                     |                | ✓                          |
|                                      | Municipal Wastes  |                     |                |                            |
|                                      | <ul> <li>Waste shall be stored within a temporary refuse collection facility, in<br/>appropriate containers prior to collection and disposal.</li> </ul>  | During Construction | Contractor     | ✓                          |
|                                      | Regular, daily collections are required by an approved waste collector.   |                     |                | <b>✓</b>                   |
| Waste Management during<br>Operation | Not required.   | N/A                 | N/A            | N/A                        |
| Ecology                              |   |                     |                |                            |
| Ecology during Construction          | Accurate Delineation of Works Area  |                     |                |                            |
|                                      | <ul> <li>Boundaries of proposed works areas shall be clearly identified and separated<br/>from external areas by a physical barrier to prevent encroachment of adjacent<br/>habitats.</li> </ul>                                    | During Construction | Contractor     | <b>✓</b>                   |
|                                      | • 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.   |                     |                | <b>✓</b>                   |
|                                      | <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: |                     |                |                            |
|                                      | <ul> <li>vehicle washing facilities to be provided at every discernible or designated<br/>vehicle exit point;</li> </ul>  | During Construction | Contractor     | ✓                          |



| Impact                                   | Environmental Protection Measures   | Timing                            | Responsibility  | Implementation<br>Status # |
|--|---|-----------------------------------|---|----------------------------|
|  | all temporary site access roads shall be sprayed with water to suppress dust as necessary;  |                                   |   | <b>✓</b>                   |
|  | all dusty materials should be sprayed with water immediately prior to any handling; and   |                                   |   | <b>✓</b>                   |
|  | • all debris should be covered entirely by impervious sheeting or stored in a sheltered debris collection area.   |                                   |   | <b>✓</b>                   |
|  | Surface Run-off   |                                   |   |                            |
|  | 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;   | During Construction               | Contractor  | ✓                          |
|  | Channel any run-off through a system of oil, grease and sediment / silt traps and reuse water on site where ever practical;                             |                                   |   | <b>✓</b>                   |
|  | All vehicle maintenance to be undertaken within a bunded area; and  |                                   |   | ✓                          |
|  | Maximise vegetation retention on-site to maximise absorption (minimise transport).  |                                   |   | ✓                          |
| 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 during              | Description of Evicting Variation   |                                   | Τ   | T                          |
| Landscape and Visual during Construction | Preservation of Existing Vegetation     Trees identified for retention within the project limit would be protected during the works                     | During Construction               | Contractor  | ✓                          |
|  | The tree transplanting and planting works shall be implemented by approved Landscape Contractors  |                                   |   | ✓                          |

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



| Impact                                | Environmental Protection Measures  | Timing              | Responsibility | Implementation<br>Status # |
|---------------------------------------|--|---------------------|----------------|----------------------------|
|                                       | Temporary Works Areas  |                     |                |                            |
|                                       | 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     | <b>✓</b>                   |
|                                       | <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     | ✓                          |
|                                       | Top Soils  |                     |                |                            |
|                                       | 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                        |
|                                       | Protection of Important Landscape Features   |                     |                |                            |
|                                       | 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                        |



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



#### **Cumulative Complaint Log**

| Complaint<br>Log No. | Date of<br>Complaint     | Received<br>From and<br>Received<br>By | Location of Complainant   | Nature of<br>Complaint   | Outcome  | Status    |
|----------------------|--------------------------|--|---|--|--|-----------|
| C131126              | 26,<br>November,<br>2013 | Mr. Tony<br>Hung from<br>WWF           | Mat Wat<br>River (works<br>sites for box<br>culvert<br>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<br>Log No. | Date of<br>Complaint    | Received<br>From and<br>Received<br>By | Location of Complainant   | Nature of<br>Complaint   | Outcome  | Status    |
|----------------------|-------------------------|--|---|--|--|-----------|
| C141120              | 20<br>November,<br>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<br>Log No. | Date of<br>Complaint    | Received<br>From and<br>Received<br>By | Location of Complainant                  | Nature of<br>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  |        |
| C171228              | 28<br>December,<br>2017 | 1823                                   | Kau Lung<br>Hang and<br>Hong Lok<br>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 | project.  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<br>Log No. | Date of Complaint | Received<br>From and<br>Received<br>By | Location of Complainant | Nature of<br>Complaint               | Outcome   | Status |
|----------------------|-------------------|--|-------------------------|--------------------------------------|---|--------|
|                      |                   |  |                         | 關建築商。附圖是該<br>區狀況。昨日洗車,<br>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. |        |