



**Environmental Protection Department**

Contract No. HY/2012/06

**Widening of Fanling Highway  
– Tai Hang to Wo Hop Shek  
Interchange****Monthly EM&A Report  
for February 2014**

[03/2014]

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Dear Sir,

10 March 2014  
By Fax (2805 5028) & Post

**Attn: Mr. James Penny**

**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)**  
**Environmental Permit No. EP-324/2008/A**  
**Condition 3.3 – Submission of Monthly EM&A Report – February 2014 for the portion of Stage 2 works under Contract No. HY/2012/06**

We refer to the revised Monthly EM&A Report – February 2014 received on 7 and 10 March 2014 submitted by ET via email. Pursuant to EP Condition 3.3, I hereby verify the Monthly EM&A Report – February 2014 (Rev. 0) for the portion of works under Stage 2 of the captioned Project which is managed under Contract No. HY/2012/06.

Yours faithfully  
for MOTT MACDONALD HONG KONG LIMITED



Terence Kong  
Independent Environmental Checker

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## EXECUTIVE SUMMARY

The proposed widening of Tolo Highway and Fanling Highway between Island House Interchange and Fanling (the Project) is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO). An Environmental Impact Assessment (EIA) Report (the approved EIA Report) together with an Environmental Monitoring and Audit (EM&A) Manual (the approved EM&A Manual) were completed and approved under the EIAO on 14 July 2000 (Register Number: EIA-043/2000).

The objective of the Project “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.

The construction works for this Project will be delivered in 2 stages i.e. Stage 1 (between Island House Interchange and Tai Hang) and Stage 2 (between Tai Hang and Wo Hop Shek Interchange). Stage 2 would be implemented under two works contracts. Contract No. HY2012/06 “Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange” and the entrusted portion to CEDD under Contract No. CV/2012/09 “Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works – Contract 3”. This report focuses on Contract No. HY2012/06 “Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange” in Stage 2 of the Project only.

Pursuant to the EP (EP-324/2008/A) Condition 2.7, the Capture Survey Trip Report for Ma Wat River Northern Meander (Version 2) for the Project was submitted on 24 December 2013 by the Environmental Team (ET) and verified by the Independent Environmental Checker (IEC) on 6 January 2014.

The construction phase of the Contract under the EP and the Environmental Monitoring and Audit (EM&A) programme of the contract commenced on 21 November 2013. The impact environmental monitoring and audit includes air quality and noise monitoring.

This report documents the findings of EM&A works conducted in the period between 1 and 28 February 2014. As informed by the Contractor, construction activities in the reporting period were:-

- Site clearance;
- Ground investigation;
- Tree felling and transplantation; and
- Piling works.

### Reporting Change

There was no reporting change required in the reporting month.

### Breaches of Action and Limit Levels for Air Quality

No exceedance of Action and Limit Level was recorded for 1-hour and 24-hour TSP monitoring in the reporting month.

### Breaches of Action and Limit Levels for Noise

No Action Level exceedance of construction noise was recorded in the reporting month, since no noise complaints related to 0700 – 1900 hours on normal weekdays was received and followed by Environmental Team in the reporting month.

No Limit Level exceedance of construction noise was recorded in the reporting month.

### **Complaint, Notification of Summons and Successful Prosecution**

One (1) air-and-odour-related complaint was received on 24 February 2014 and followed up by the Environmental Team in February 2014. The details of the complaint are listed in Section 4.6.3.

The investigation and findings, and the recommended mitigation measures of the complaint are annexed in Appendix M.

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

### **Future Key Issues**

Key issues to be considered in the coming month include:

- Properly store and label oils and chemicals on site;
- Chemical, chemical waste and waste management;
- Collection of construction waste should be carried out regularly;
- Properly maintain all drainage facilities and wheel washing facilities on site;
- Exposed slopes should be covered up properly if no temporary work will be conducted;
- Quieter powered mechanical equipment should be used;
- Suppress dust generated from excavation activities and haul road traffic; and
- Tree protective measures for all retained trees should be well maintained.

## 1 INTRODUCTION

### 1.1 Background

- 1.1.1. Tolo Highway and Fanling Highway are the expressways in the North East New Territories (NENT) connecting Sha Tin, Tai Po and Fanling. These highways form a vital part of the strategic Route 9, which links Hong Kong Island to the boundary at Shenzhen. At present, this section of Route 9 is a dual 3-lane carriageway. However, at several major interchanges along this section of Route 9, the highway is a dual-2 lane carriageway only. Severe congestion is a frequent occurrence during the peak periods, particularly in the Kowloon-bound direction.
- 1.1.2. The objective of the Project “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.
- 1.1.3. The Project is a designated project and is governed by an Environmental Permit (EP-324/2008)(EP) issued by EPD on 23 December 2008. Subsequently, EPD issued a Variation of Environmental Permit (EP-324/2008/A) (VEP) on 31 January 2012.
- 1.1.4. The scope of the Project comprises mainly:-
- (i) Widening of a 5.7 km section of Tolo Highway and 3.0 km section of Fanling Highway between Island House Interchange and Wo Hop Shek Interchange from the existing dual 3-lane to dual 4-lane, including construction of new vehicular bridges;
  - (ii) Widening of interchange sections at Island House Interchange, Tai Po North Interchange, and Lam Kam Road Interchange from dual 2-lane to dual 3-lane, except Sha Tin bound carriageway at Tai Po North Interchange, which is widened from 3-lane to 4-lane, including realignment of various slip roads;
  - (iii) Modification and reconstruction of highways, vehicular bridges, underpasses and footbridges.
- 1.1.5. The construction works for this Project will be delivered in 2 stages i.e. Stage 1 (between Island House Interchange and Tai Hang) and Stage 2 (between Tai Hang and Wo Hop Shek Interchange). Stage 2 would be implemented under two works contracts. Contract No. HY/2012/06 “Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange” and the entrusted portion to CEDD under Contract No. CV/2012/09 “Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works – Contract 3”. This report focuses on Contract No. HY2012/06 “Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange” in Stage 2 of the Project only.
- 1.1.6. Hyder-Arup-Black and Veatch Joint Venture (HABVJV) are appointed by Highways Department (HyD) as the consultants for the design and construction assignment for the Tolo project under Agreement No. CE 58/2000 Supplementary Agreement No. 3 (SA3) (i.e. the Engineer for the Contract).
- 1.1.7. China State Construction Engineering (Hong Kong) Ltd. (CSHK) was commissioned as the Contractor of the Contract.
- 1.1.8. AECOM Asia Co. Ltd. was commissioned by China State Construction Engineering (Hong Kong) Limited as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) works for the Contract and Mott MacDonald Hong Kong Ltd. acts as the Independent Environmental Checker (IEC) for the Contract.
- 1.1.9. The construction phase of the Contract under the EP commenced on 21 November 2013.
- 1.1.10. According to the updated EM&A Manual of Stage 2 of the Project, there is a need of an EM&A programme including air quality and noise monitoring. The EM&A programme for Stage 2 of the Project commenced on 21 November 2013.

## 1.2 Scope of Report

1.2.1 This is the fourth monthly EM&A Report under the Contract No. HY/2012/06 “Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange. This report presents a summary of the environmental monitoring and audit works, list of activities and mitigation measures proposed by the ET for the Contract in February 2014.

## 1.3 Project Organization

1.3.1 The project organization structure is shown in Appendix A. The key personnel contact names and numbers are summarized in Table 1.1.

**Table 1.1 Contact Information of Key Personnel**

Party	Position	Name	Telephone	Fax
<b>ER</b> (Hyder-Arup-Black & Veatch Joint Venture)	Chief Resident Engineer	Edwin Chung	6115 0818	2638 0950
<b>IEC</b> (Mott MacDonald Hong Kong Limited)	Independent Environmental Checker	Terence Kong	2828 5919	2827 1823
<b>Contractor</b> (China State Construction Engineering (Hong Kong) Limited)	Site Agent	Edward Ho	9183 3827	2672 2501
	Environmental Officer	Michael Tsang	9277 4956	2672 2501
		C C Chow	9679 6315	2672 2501
<b>ET</b> (AECOM Asia Company Limited)	ET Leader	Y W Fung	3922 9393	3922 9797

## 1.4 Summary of Construction Works

1.4.1 The construction phase for the Contract under the EP commenced on 21 November 2013.

1.4.2 Details of the construction works carried out by the Contractor in this reporting period are listed below:-

- Site clearance;
- Ground investigation;
- Tree felling and transplantation; and
- Piling works.

1.4.3 The Construction Programme is shown in Appendix B.

1.4.4 The general layout plan of the Project site showing the contract areas is shown in Figure 1.1.

1.4.5 The environmental mitigation measures implementation schedule are presented in Appendix C.



## **1.5 Summary of EM&A Programme Requirements**

1.5.1 The EM&A programme required environmental monitoring for air quality, noise and environmental site inspections for air quality, water quality, noise, waste management, ecology, and landscape and visual impact. The EM&A requirements for each parameter described in the following sections include:-

- All monitoring parameters;
- Monitoring schedules for the reporting month and forthcoming months;
- Action and Limit levels for all environmental parameters;
- Event / Action Plan;
- Environmental mitigation measures, as recommended in the Project EIA study final report; and
- Environmental requirement in contract documents.

## 2 AIR QUALITY MONITORING

### 2.1 Monitoring Requirements

2.1.1 In accordance with the updated EM&A Manual, baseline 1-hour and 24-hour TSP levels at one air quality monitoring station was established. Impact 1-hour TSP monitoring was conducted for at least three times every 6 days, while impact 24-hour TSP monitoring was carried out for at least once every 6 days. The Action and Limit level of the air quality monitoring is provided in Appendix D.

### 2.2 Monitoring Equipment

2.2.1 24-hour TSP air quality monitoring was performed using High Volume Sampler (HVS) located at each designated monitoring station. The HVS meets all the requirements of the updated EM&A Manual. Portable direct reading dust meters were used to carry out the 1-hour TSP monitoring. Brand and model of the equipment is given in Table 2.1.

**Table 2.1 Air Quality Monitoring Equipment**

Equipment	Brand and Model
Portable direct reading dust meter (1-hour TSP)	Sibata Digital Dust Monitor (Model No. LD-3 and LD-3B)
High Volume Sampler (24-hour TSP)	Tisch Total Suspended Particulate Mass Flow Controlled High Volume Air Sampler (Model No. TE-5170)

### 2.3 Monitoring Locations

2.3.1 The monitoring station was set up at the proposed location in accordance with updated EM&A Manual. Table 2.2 describes details of the monitoring station. The locations are shown in Figure 1.2a.

**Table 2.2 Locations of Impact Air Quality Monitoring Station**

Location	Monitoring Station
AM2 (SR2)	Fanling Government Secondary School

### 2.4 Monitoring Parameters, Frequency and Duration

2.4.1 Table 2.3 summarizes the monitoring parameters, frequency and duration of impact TSP monitoring.

**Table 2.3 Air Quality Monitoring Parameters, Frequency and Duration**

Parameter	Frequency and Duration
24-hour TSP	Once every 6 days
1-hour TSP	3 times every 6 days while the highest dust impact was expected

## 2.5 Monitoring Methodology

### 2.5.1 24-hour TSP Monitoring

- (a) The HVS was installed in the vicinity of the air sensitive receivers. The following criteria were considered in the installation of the HVS.
- (i) A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
  - (ii) The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
  - (iii) A minimum of 2 meters separation from walls, parapets and penthouse for rooftop sampler.
  - (iv) A minimum of 2 meters separation from any supporting structure, measured horizontally.
  - (v) No furnace or incinerator flues nearby.
  - (vi) Airflow around the sampler was unrestricted.
  - (vii) Permission was obtained to set up the samplers and access to the monitoring stations.
  - (viii) A secured supply of electricity was obtained to operate the samplers.
  - (ix) The sampler was located more than 20 meters from any dripline.
  - (x) Any wire fence and gate, required to protect the sampler, did not obstruct the monitoring process.
  - (xi) Flow control accuracy was kept within  $\pm 2.5\%$  deviation over 24-hour sampling period.
- (b) Preparation of Filter Papers
- (i) Glass fibre filters, G810 were labelled and sufficient filters that were clean and without pinholes were selected.
  - (ii) All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than  $\pm 3$  °C; the relative humidity (RH) was < 50% and not variable by more than  $\pm 5\%$ . A convenient working RH was 40%.
  - (iii) All filter papers were prepared and analysed by ALS Technichem (HK) Pty Ltd., which is a HOKLAS accredited laboratory and has comprehensive quality assurance and quality control programmes.
- (c) Field Monitoring
- (i) The power supply was checked to ensure the HVS works properly.
  - (ii) The filter holder and the area surrounding the filter were cleaned.
  - (iii) The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
  - (iv) The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
  - (v) The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied was sufficient to avoid air leakage at the edges.
  - (vi) Then the shelter lid was closed and was secured with the aluminum strip.
  - (vii) The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
  - (viii) A new flow rate record sheet was set into the flow recorder.
  - (ix) On site temperature and atmospheric pressure readings were taken and the flow rate of the HVS was checked and adjusted at around 1.1 m<sup>3</sup>/min, and complied with the range specified in the updated EM&A Manual (i.e. 0.6-1.7 m<sup>3</sup>/min).
  - (x) The programmable digital timer was set for a sampling period of 24 hrs, and the starting time, weather condition and the filter number were recorded.
  - (xi) The initial elapsed time was recorded.
  - (xii) At the end of sampling, on site temperature and atmospheric pressure readings were taken and the final flow rate of the HVS was checked and recorded.
  - (xiii) The final elapsed time was recorded.

- (xiv) The sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact.
  - (xv) It was then placed in a clean plastic envelope and sealed.
  - (xvi) All monitoring information was recorded on a standard data sheet.
  - (xvii) Filters were then sent to ALS Technichem (HK) Pty Ltd. for analysis.
- (d) Maintenance and Calibration
- (i) 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.
  - (ii) 5-point calibration of the HVS was conducted using TE-5025A Calibration Kit prior to the commencement of baseline monitoring. Bi-monthly 5-point calibration of the HVS will be carried out during impact monitoring.
  - (iii) Calibration certificate of the HVSs are provided in Appendix E.

## 2.5.2 1-hour TSP Monitoring

### (a) Measuring Procedures

The measuring procedures of the 1-hour dust meter were in accordance with the Manufacturer's Instruction Manual as follows:-

- (i) Turn the power on.
- (ii) Close the air collecting opening cover.
- (iii) Push the "TIME SETTING" switch to [BG].
- (iv) Push "START/STOP" switch to perform background measurement for 6 seconds.
- (v) Turn the knob at SENSI ADJ position to insert the light scattering plate.
- (vi) Leave the equipment for 1 minute upon "SPAN CHECK" is indicated in the display.
- (vii) Push "START/STOP" switch to perform automatic sensitivity adjustment. This measurement takes 1 minute.
- (viii) Pull out the knob and return it to MEASURE position.
- (ix) Push the "TIME SETTING" switch the time set in the display to 3 hours.
- (x) Lower down the air collection opening cover.
- (xi) Push "START/STOP" switch to start measurement.

### (b) Maintenance and Calibration

- (i) The 1-hour TSP meter was calibrated at 1-year intervals against a continuous particulate TEOM Monitor, Series 1400ab. Calibration certificates of the Laser Dust Monitors are provided in Appendix E.
- (ii) 1-hour validation checking of the TSP meter against HVS is carried out yearly at the air quality monitoring locations.

## 2.6 Monitoring Schedule for the Reporting Month

2.6.1 The schedule for environmental monitoring in February 2014 is provided in Appendix F.

## 2.7 Results and Observations

2.7.1 The monitoring results for 1-hour TSP and 24-hour TSP are summarized in Table 2.4 and 2.5 respectively. Detailed impact air quality monitoring results are presented in Appendix G.

**Table 2.4 Summary of 1-hour TSP Monitoring Results in the Reporting Period**

Location	Average ( $\mu\text{g}/\text{m}^3$ )	Range ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
<b>AM2</b> (Fanling Government Secondary School)	75.9	71.0 – 82.1	317.8	500

**Table 2.5 Summary of 24-hour TSP Monitoring Results in the Reporting Period**

Location	Average ( $\mu\text{g}/\text{m}^3$ )	Range ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )
<b>AM2</b> (Fanling Government Secondary School)	38.1	30.0 – 44.0	200.7	260

- 2.7.2 The major dust source during the monitoring mainly from nearby traffic emission.
- 2.7.3 All 1-hour and 24-hour TSP results were below the Action and Limit Level at all monitoring locations in the reporting month.
- 2.7.4 The event action plan is annexed in Appendix J.
- 2.7.5 Weather information including wind speed and wind direction is annexed in Appendix H. The information was obtained from the Hong Kong Observatory Tai Po and Tai Mei Tuk Automatic Weather Stations.

### 3 NOISE MONITORING

#### 3.1 Monitoring Requirements

3.1.1 In accordance with the EM&A Manual, impact noise monitoring was conducted for at least once per week during the construction phase of the Contract. The Action and Limit level of the noise monitoring is provided in Appendix D.

#### 3.2 Monitoring Equipment

3.2.1 Noise monitoring was performed using sound level meter at each designated monitoring station. The sound level meters deployed comply with the International Electrotechnical Commission Publications (IEC) 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrator was deployed to check the sound level meters at a known sound pressure level. Brand and model of the equipment is given in Table 3.1.

**Table 3.1 Noise Monitoring Equipment**

Equipment	Brand and Model
Integrated Sound Level Meter	Rion NL-31; B&K 2250L
Acoustic Calibrator	Rion NC-73

#### 3.3 Monitoring Locations

3.3.1 Monitoring stations M2 and M3 were set up at the proposed locations in accordance with updated EM&A Manual. Figure 1.2a-b shows the locations of the monitoring stations. Table 3.2 describes the details of the monitoring stations.

**Table 3.2 Locations of Impact Noise Monitoring Stations**

Monitoring Station	Location	Description
M2	West Tai Wo	1.2m from the ground floor free-field of the Residential
M3	Fanling Government Secondary School	1m from the exterior of the roof top façade of the school

#### 3.4 Monitoring Parameters, Frequency and Duration

3.4.1 Table 3.3 summarizes the monitoring parameters, frequency and duration of impact noise monitoring.

**Table 3.3 Noise Monitoring Parameters, Frequency and Duration**

Parameter	Frequency and Duration
30-mins measurement at each monitoring station between 0700 and 1900 on normal weekdays. $L_{eq}$ , $L_{10}$ and $L_{90}$ would be recorded.	At least once per week

### 3.5 Monitoring Methodology

#### 3.5.1 Monitoring Procedure

- (a) Façade measurement was made at monitoring station M3, while free-field measurement was made at monitoring station M2.
- (b) 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 M2.
- (c) The battery condition was checked to ensure the correct functioning of the meter.
- (d) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:-
  - (i) frequency weighting: A
  - (ii) time weighting: Fast
  - (iii) time measurement:  $L_{eq(30\text{-minutes})}$  during non-restricted hours i.e. 07:00 – 1900 on normal weekdays;  $L_{eq(5\text{-minutes})}$  during restricted hours i.e. 19:00 – 23:00 and 23:00 – 07:00 of normal weekdays, whole day of Sundays and Public Holidays
- (e) 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 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- (f) During the monitoring period, the  $L_{eq}$ ,  $L_{10}$  and  $L_{90}$  were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- (g) Noise measurement was paused during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible. Observations were recorded when intrusive noise was unavoidable.
- (h) Noise monitoring was cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind with gusts exceeding 10m/s.

#### 3.5.2 Maintenance and Calibration

- (a) The microphone head of the sound level meter was cleaned with soft cloth at regular intervals.
- (b) The meter and calibrator were sent to the supplier or HOKLAS laboratory to check and calibrate at yearly intervals.
- (c) Calibration certificates of the sound level meters and acoustic calibrators are provided in Appendix E.

### 3.6 Monitoring Schedule for the Reporting Month

3.6.1 The schedule for environmental monitoring in February 2014 is provided in Appendix F.

### 3.7 Monitoring Results

3.7.1 The monitoring results for construction noise are summarized in Table 3.4 and the monitoring data is provided in Appendix I.

**Table 3.4 Summary of Construction Noise Monitoring Results in the Reporting Period**

	Average, dB(A), $L_{eq(30\text{ mins})}$	Range, dB(A), $L_{eq(30\text{ mins})}$	Limit Level, dB(A), $L_{eq(30\text{ mins})}$
M2*	68.4	67.9 – 69.8	75
M3#	63.0	62.1 – 63.8	65/70

\*+3dB(A) Façade correction included

# Limit Level of 70dB(A) applies to education institutes while 65dB(A) applies during school examination period.

- 3.7.2 There was no noise complaint related to 0700 – 1900 hours on normal weekdays was received and followed up by Environmental Team in the reporting period. Hence, no Action Level exceedance was recorded.
- 3.7.3 No noise monitoring result exceeding the Limit Level was recorded at all monitoring stations in the reporting month.
- 3.7.4 Major noise sources during the noise monitoring were mainly road traffic noise.
- 3.7.5 The event action plan is annexed in Appendix J.



## **4 ENVIRONMENTAL SITE INSPECTION AND AUDIT**

### **4.1 Site Inspection**

4.1.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Contract. In the reporting month, 4 site inspections were carried out respectively on 4, 13, 18 and 25 February 2014 for the Contract. While no specific observation was recorded, recommendations on remedial actions were given to the Contractor for precautionary purpose.

4.1.2 The environmental site inspections summaries are provided in Appendix K.

4.1.3 Particular observations during the site inspections are described below:

#### ***Air Quality***

4.1.4 No adverse observation was identified in the reporting month.

#### ***Noise***

4.1.5 No adverse observation was identified in the reporting month.

#### ***Water Quality***

4.1.6 No adverse observation was identified in the reporting month.

#### ***Chemical and Waste Management***

4.1.7 The Contractor was reminded to clear the unused chemicals.

#### ***Landscape and Visual Impact***

4.1.8 No adverse observation was identified in the reporting month.

#### ***Miscellaneous***

4.1.9 No adverse observation was identified in the reporting month.

### **4.2 Advice on the Solid and Liquid Waste Management Status**

4.2.1 The Contractor has registered as chemical waste producers for the Contract. C&D material sorting was carried out on site. Sufficient numbers of receptacles were available for general refuse collection.

4.2.2 As advised by the Contractor, 14m<sup>3</sup> of inert C&D material was disposed of as public fill to Tuen Mun 38 (of which 0m<sup>3</sup> was broken concrete), while 25m<sup>3</sup> of general refuse was disposed of at NENT landfill. 55kg of paper/cardboard packaging, 0kg of plastics and 0kg of metals were collected by recycling contractors in the reporting month. 55m<sup>3</sup> and 0m<sup>3</sup> of inert C&D materials were reused on site and reused in NENT for backfilling purpose respectively. 0kg of chemical wastes was collected by licensed contractors in the reporting period.

4.2.3 The actual amounts of different types of waste generated by the activities of the Project in the reporting month are shown in Table 4.1.

**Table 4.1 Summary of Waste Flow Table**

Waste Type	Actual Amount	Disposal/Reuse Locations
Inert C&D materials	14m <sup>3</sup> (of which 0m <sup>3</sup> was broken concrete)	Tuen Mun 38
General refuse	25m <sup>3</sup>	NENT Landfill
Paper/cardboard packaging	55kg	Recycling Contractors
Plastics	0kg	Recycling Contractors
Metals	0kg	Recycling Contractors
C&D materials reused on site	55m <sup>3</sup>	Site Area
C&D materials reused in NENT for backfilling	0m <sup>3</sup>	NENT Landfill
Chemical wastes	0kg	Licensed Contractors

4.2.4 The Contractor was advised to maintain on site waste sorting and recording system and maximize reuse / recycle of C&D wastes.

### 4.3 Environmental Licenses and Permits

4.3.1 The environmental licenses and permits for Stage 1 of the Project and valid in the reporting month is summarized in Table 4.2.

**Table 4.2 Summary of Environmental Licensing and Permit Status**

Statutory Reference	License/ Permit	License or Permit No.	Valid Period		License/ Permit Holder	Remarks
			From	To		
EIAO	Environmental Permit	EP-324/2008/A	31/01/2012	N/A	HyD	--
WPCO	Discharge License (Site)	WT00017159-2013	18/09/2013	30/09/2018	CSHK	--
WDO	Chemical Waste Producer Registration	5213-722-C3822-01	5/09/2013	N/A	CSHK	Chemical waste produced in Contract HY/2012/06
WDO	Billing Account for Disposal of Construction Waste	7009328	08/09/2009	N/A	CSHK	Waste disposal in Contract HY/2008/09
NCO	Construction Noise Permit	GW-RN0648-13	10/11/2013	20/4/2014	CSHK	Tree Felling at South of Fanling Highway between Yuen Leng and Hong Lok Yuen (0900 to 1800 hours on Sunday)
		GW-RN0755-13	08/12/2013	01/06/2014	CSHK	Tree Felling at North of Fanling Highway between Yuen Leng and Hong Lok Yuen

Statutory Reference	License/ Permit	License or Permit No.	Valid Period		License/ Permit Holder	Remarks
			From	To		
		GW-RN0782-13	12/12/2013	07/06/2014	CSHK	Loading & Unloading at Fanling Highway between Hong Lok Yuen and Yuen Leng
		GW-RN0029-14	23/01/2014	25/02/2014	CSHK	Tree Felling at Fanling Highway near Ho Ka Yuen Bridge (South Bound)
		GW-RN0040-14	09/02/2014	20/07/2014	CSHK	Loading and Unloading at Fanling Highway between Ch.21.9 and Ch. 24.1 (North Bound)
		GW-RN0055-14	31/01/2014	27/04/2014	CSHK	Loading and Unloading at Fanling Highway between Nam Wah Po and Tai Hang North Bound
		GW-RN0068-14	09/02/2014	20/7/2014	CSHK	Tree Felling at Fanling Highway between Ch.23.0 and 23.8 (North Bound)

#### 4.4 Implementation Status of Environmental Mitigation Measures

4.4.1 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in Appendix C.

#### 4.5 Summary of Exceedances of the Environmental Quality Performance Limit

4.5.1 All 1-hour and 24-hour TSP monitoring results complied with the Action / Limit Levels in the reporting period.

4.5.2 For construction noise, no Action and Limit Level exceedance was recorded at all monitoring stations in the reporting period.

#### 4.6 Summary of Complaints, Notification of Summons and Successful Prosecutions

4.6.1 The Environmental Complaint Handling Procedure is annexed in Figure 4.1.

4.6.2 One (1) air-and-odour-related complaint was received on 24 February 2014 and followed up by the Environmental Team in the reporting month. The details of the complaint are listed in Section 4.6.3. No notification of summons and successful prosecution was received in the reporting month.

4.6.3 EPD referred an air-and-odour complaint on 24 February 2014. The complainant complained about the construction site located near the bus stop in Fui Sha Wai, Tai Hang, Tai Wo Service Road West.

When construction works were carried out, odour, white smoke and dust were generated. The complainant asked for follow-up actions.

- 4.6.4 The investigation and findings, and the recommended mitigation measures of the complaint are annexed in Appendix M.
- 4.6.5 Statistics on complaints, notifications of summons and successful prosecutions are summarized in Appendix L.

## **5 FUTURE KEY ISSUES**

### **5.1 Construction Programme for the Coming Months**

5.1.1 The major construction works for the Contract in March 2014 will be:-

- Site clearance;
- Ground investigation;
- Tree felling and transplantation;
- Piling works; and
- Pipe laying.

### **5.2 Key Issues for the Coming Month**

5.2.1 Key issues to be considered in March 2014:-

- Properly store and label oils and chemicals on site;
- Chemical, chemical waste and waste management;
- Collection of construction waste should be carried out regularly;
- Properly maintain all drainage facilities and wheel washing facilities on site;
- Exposed slopes should be covered up properly if no temporary work will be conducted;
- Quieter powered mechanical equipment should be used;
- Suppress dust generated from excavation activities and haul road traffic; and
- Tree protective measures for all retained trees should be well maintained.

### **5.3 Monitoring Schedule for the Coming Month**

5.3.1 The tentative schedule for environmental monitoring in March 2014 is provided in Appendix F.

## **6 CONCLUSIONS AND RECOMMENDATIONS**

### **6.1 Conclusions**

- 6.1.1 The construction phase and EM&A programme of the Contract commenced on 21 November 2013.
- 6.1.2 1-hour TSP, 24-hour TSP and noise monitoring were carried out in the reporting period.
- 6.1.3 All 1-hour and 24-hour TSP monitoring results complied with the Action / Limit Levels in the reporting period. No Action and Limit Level exceedance for construction noise was recorded at all monitoring stations in the reporting month.
- 6.1.4 4 environmental site inspections were carried out in February 2014. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site audits.
- 6.1.5 One (1) air-and-odour-related complaint was received on 24 February 2014 and followed up by the Environmental Team in the reporting month. The details of the complaint are listed in Section 4.6.3. No notification of summons and successful prosecution was received in the reporting month.

### **6.2 Recommendations**

- 6.2.1 According to the environmental site inspection performed in the reporting month, while no specific observation was recorded, the following recommendations on remedial actions were provided to the Contractor for precautionary purpose:

#### ***Air Quality Impact***

- All vehicles should be washed to remove any dusty materials before leaving the site.
- Haul roads should be sufficiently dampened to minimize fugitive dust generation.
- Wheel washing facilities should be properly maintained to ensure properly functioning.

#### ***Construction Noise Impact***

- Noisy operations should be oriented to a direction away from sensitive receivers as far as possible.

#### ***Water Quality Impact***

- Stagnant water accumulated in drip trays should be removed.
- Silt accumulated at public drain should be cleaned up.
- Silty effluent should be treated/desilted before discharged. Untreated effluent should be prevented from entering public drain channel.

#### ***Chemical and Waste Management***

- C&D material should be sorted and removed timely.
- All plants on site should be properly maintained to prevent oil leakage.
- Oil stains on soil surface and empty chemical containers should be cleared and disposed of as chemical waste.

#### ***Landscape and Visual Impact***

- All retained trees should be properly fenced off at the works area.

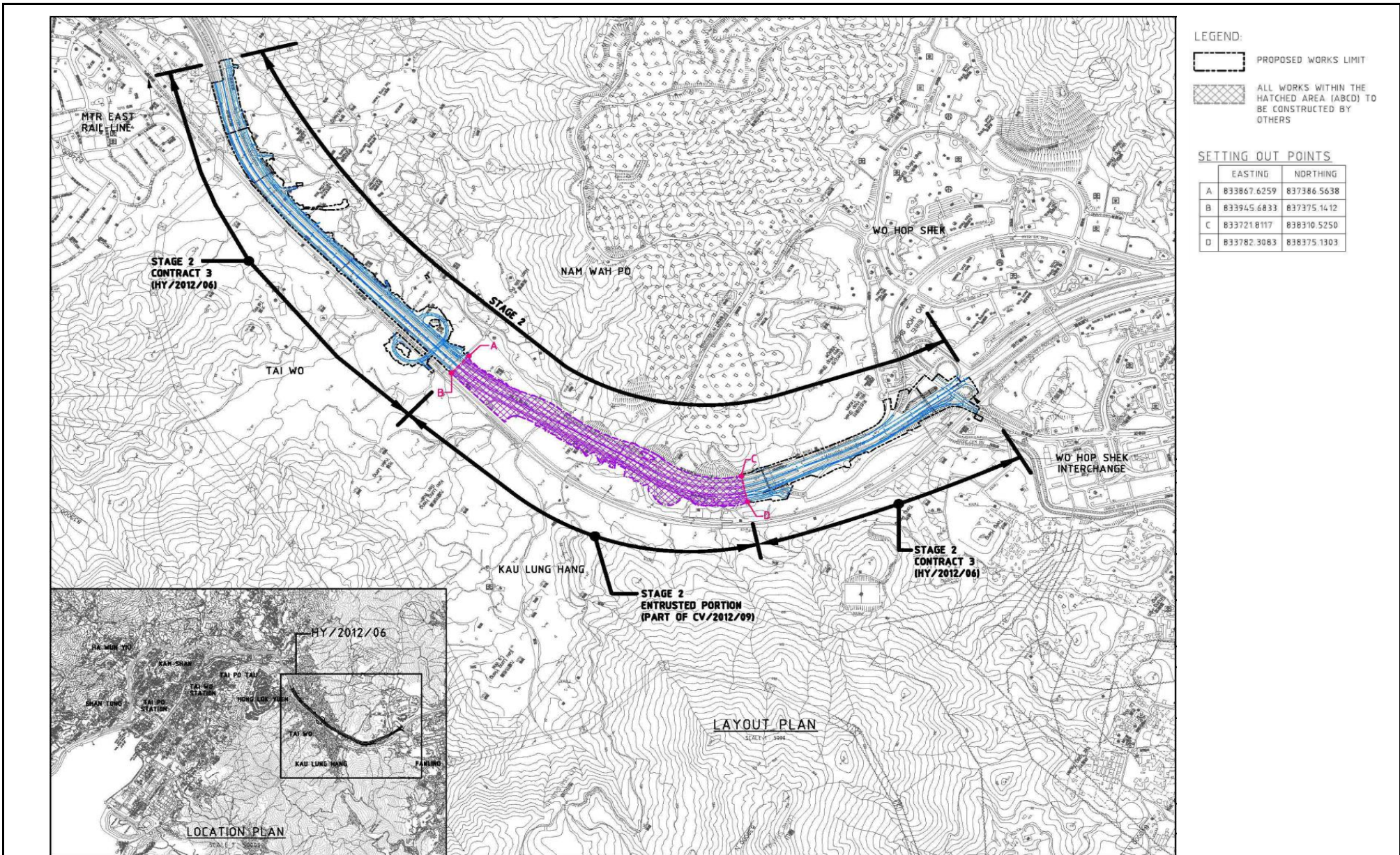
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## FIGURES

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CONTRACT NO. HY/2012/06  
 WIDENING OF FANLING HIGHWAY  
 - TAI HANG TO WO HOP SHEK INTERCHANGE

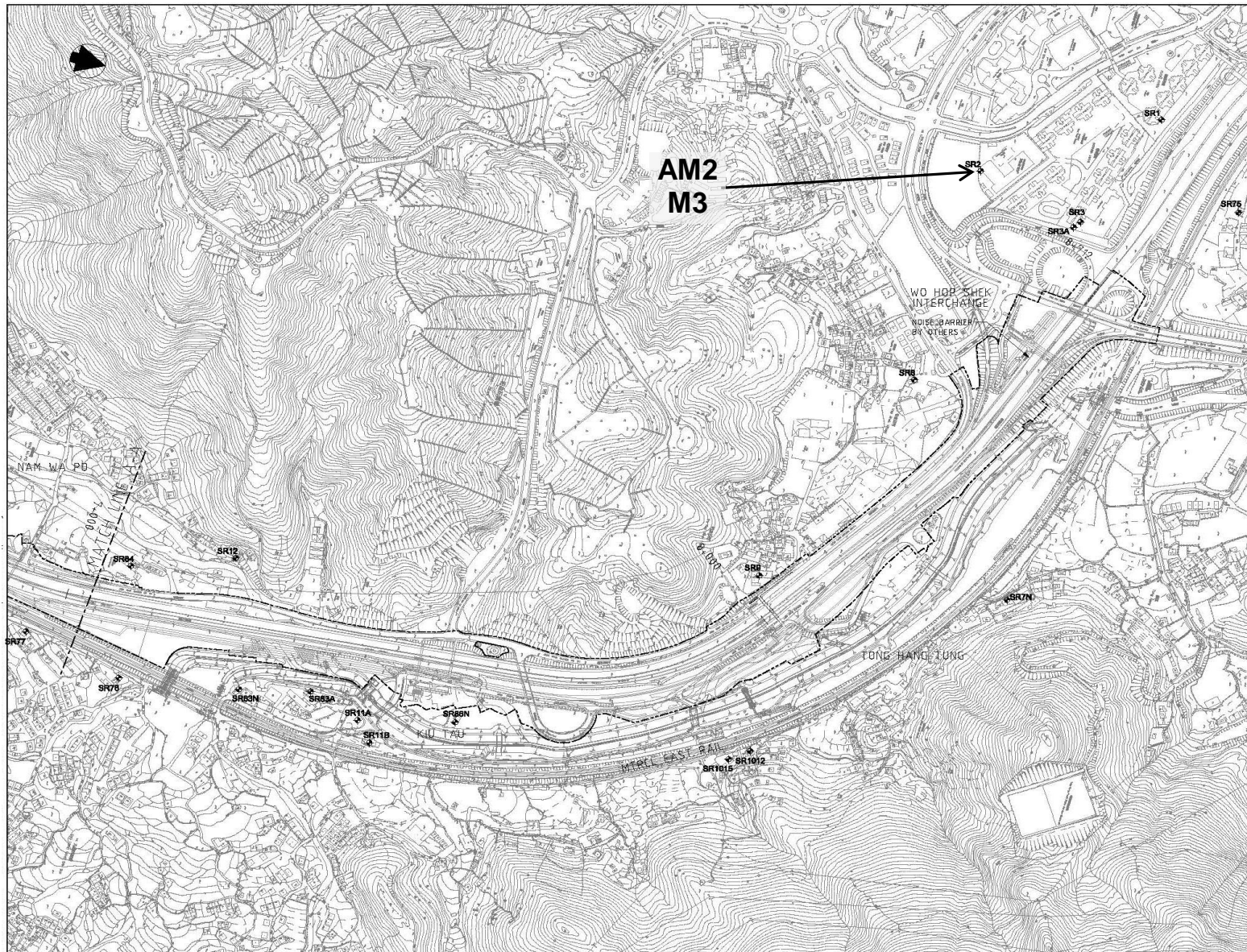


Layout Plan

Date: Dec 2013

Figure 1.1





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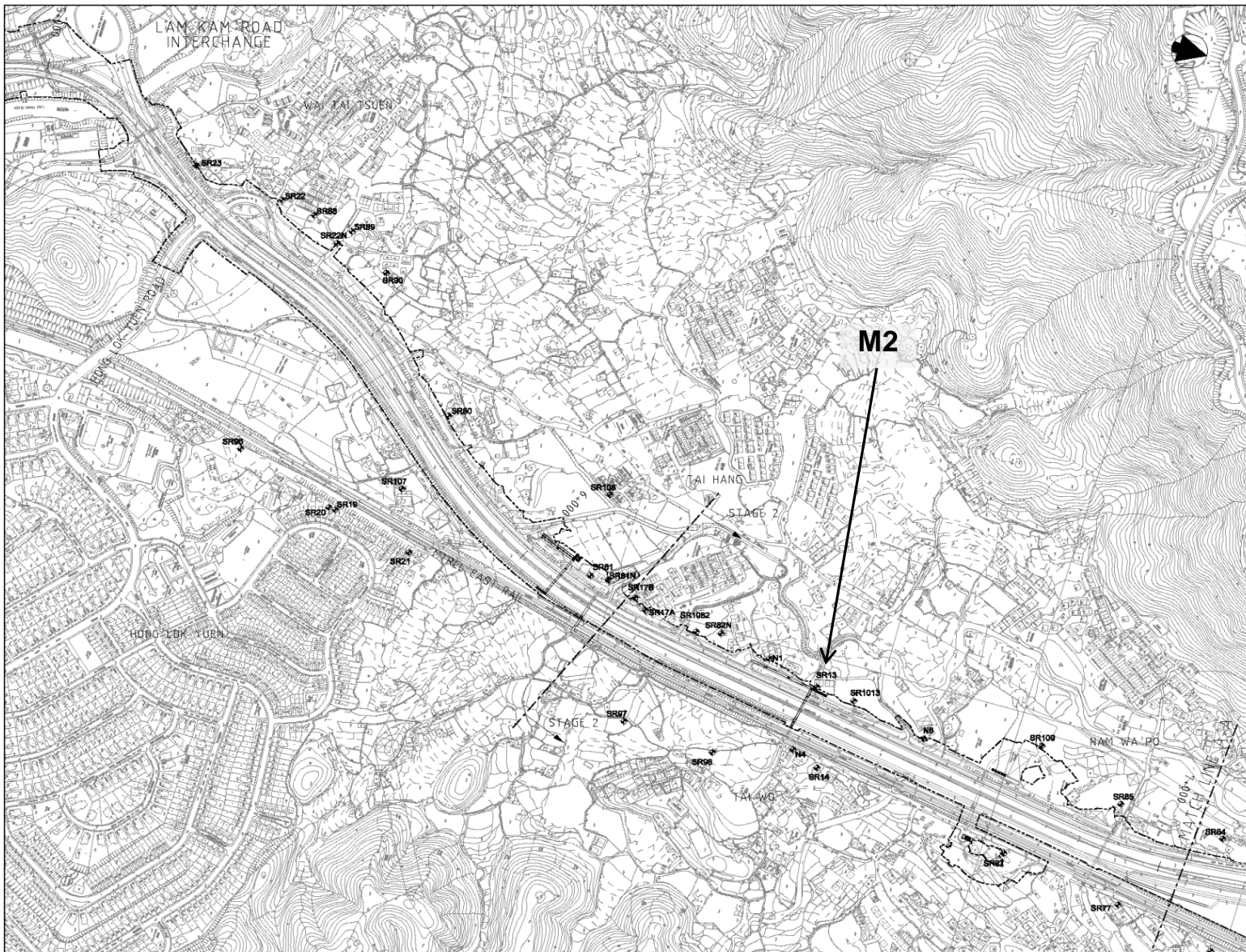
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 WIDENING OF FANLING HIGHWAY  
 - TAI HANG TO WO HOP SHEK INTERCHANGE



Locations of Monitoring Station

Date: Dec 2013

Figure 1.2a



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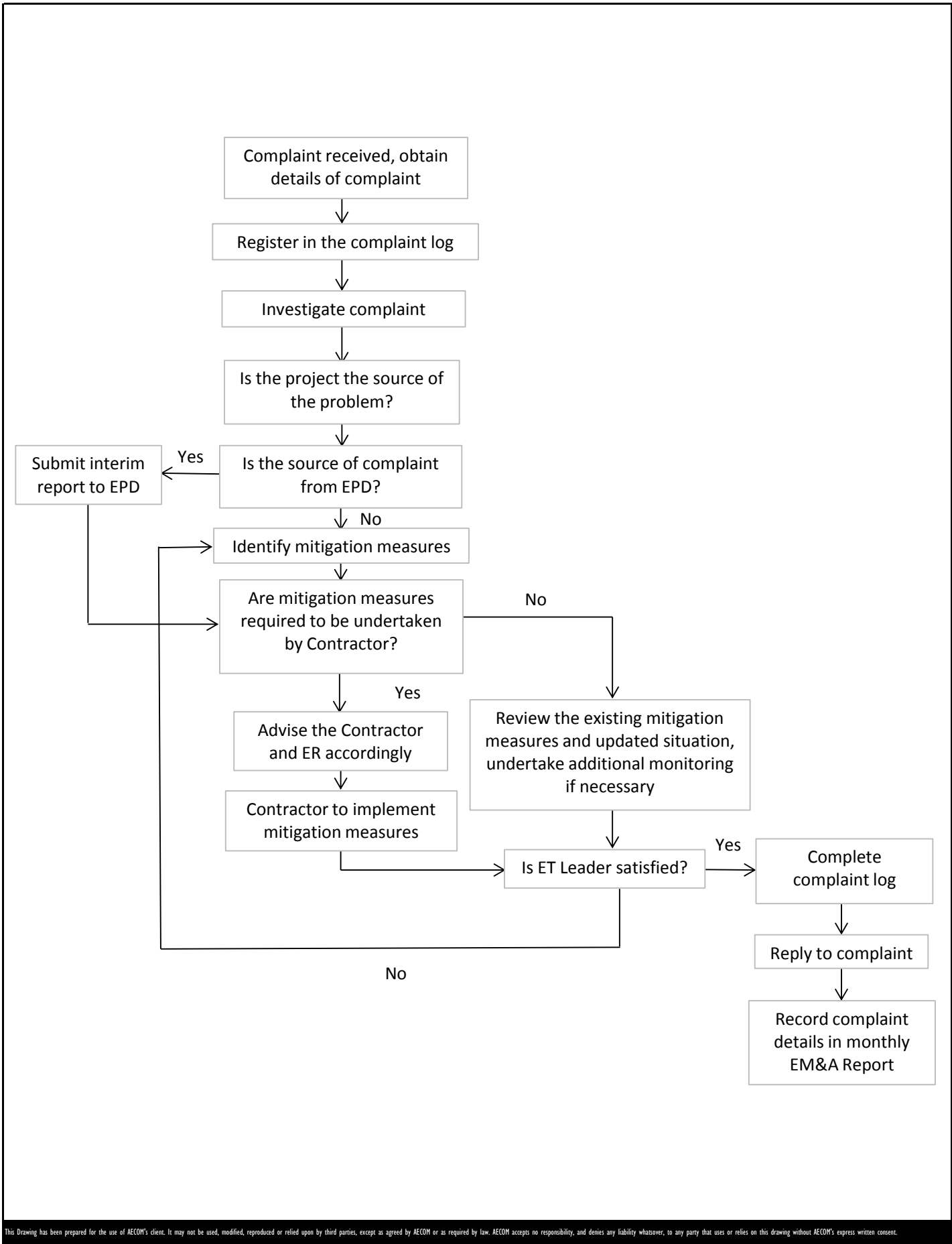
CONTRACT NO. HY/2012/06  
 WIDENING OF FANLING HIGHWAY  
 - TAI HANG TO WO HOP SHEK INTERCHANGE



Locations of Monitoring Station

Date: Dec 2013

Figure 1.2b



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CONTRACT NO. HY/2012/06  
 WIDENING OF FANLING HIGHWAY  
 - TAI HANG TO WO HOP SHEK INTERCHANGE



Environmental Complaint Handling Procedure

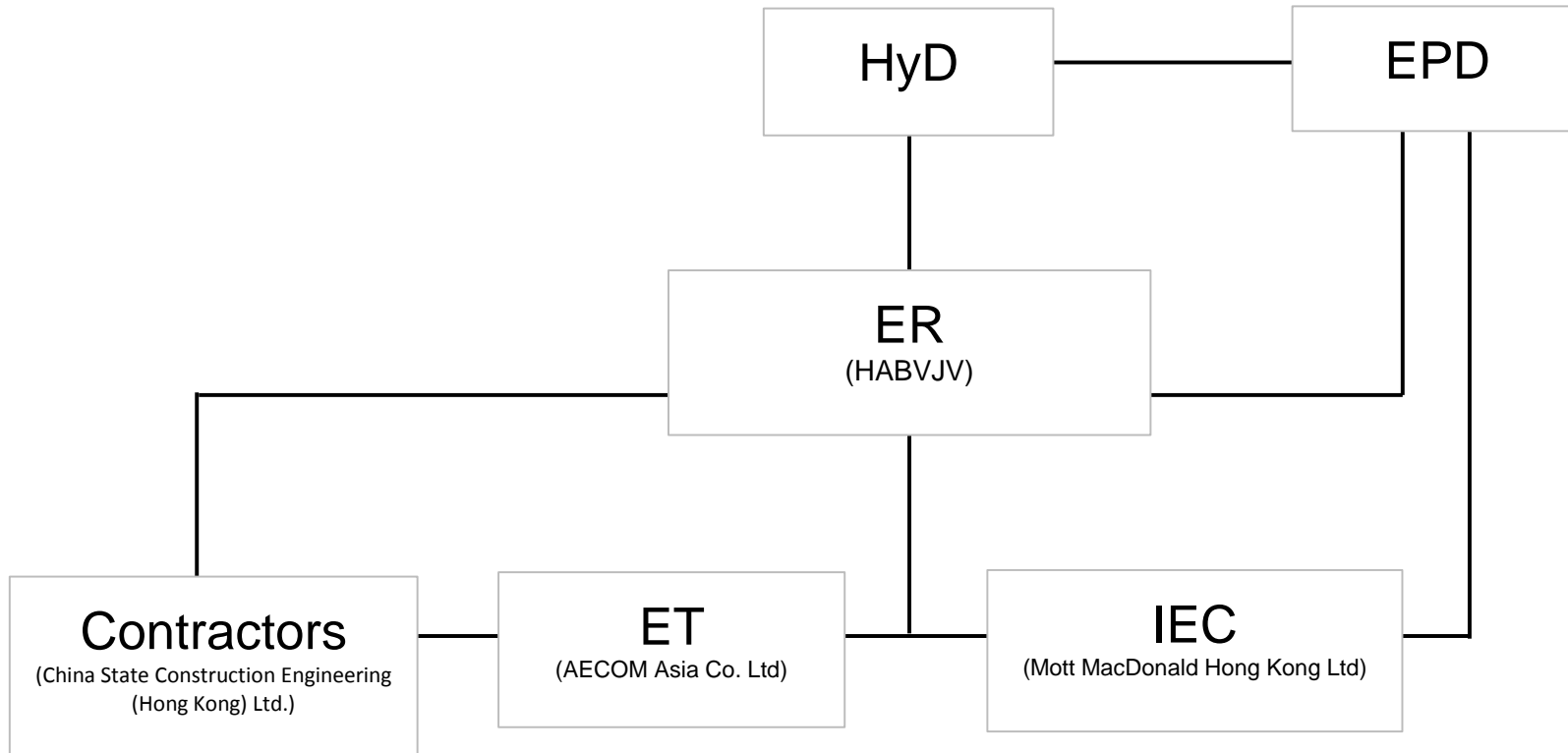
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**APPENDIX A  
PROJECT ORGANIZATION STRUCTURE**

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CONTRACT NO. HY/2012/06  
 WIDENING OF FANLING HIGHWAY  
 - TAI HANG TO WO HOP SHEK INTERCHANGE



Project Organization Structure

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**APPENDIX B  
CONSTRUCTION PROGRAMMES**

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Activity ID	Activity Name	Duration % Complete	Remaining Duration	Original Duration	Start	Finish	Total Float	2014				
								Feb	Mar	Apr	May	
<b>Contract Condition</b>												
<b>General</b>												
<b>Contract Condition</b>												
POSSA320	Site Area SA320 (0d)	0%	0	0	01-Apr-14*		0					◆ Site Area SA320 (0d)
POSSA320A	Site Area SA320A (120d)	0%	0	0	01-Apr-14*		0					◆ Site Area SA320A (120d)
POSSA320B	Site Area SA320B (0d)	0%	0	0	01-Apr-14*		0					◆ Site Area SA320B (0d)
POSSA322	Site Area SA322 (120d)	0%	0	0	01-Apr-14*		0					◆ Site Area SA322 (120d)
POSSA324	Site Area SA324 (180d)	0%	0	0	01-Apr-14*		0					◆ Site Area SA324 (180d)
POSSA325	Site Area SA325 (180d)	0%	0	0	01-Apr-14*		0					◆ Site Area SA325 (180d)
POSSA326	Site Area SA326 (180d)	0%	0	0	01-Apr-14*		0					◆ Site Area SA326 (180d)
POSSA327	Site Area SA327 (180d)	0%	0	0	01-Apr-14*		0					◆ Site Area SA327 (180d)
POSSA328	Site Area SA328 (90d)	0%	0	0	01-Apr-14*		0					◆ Site Area SA328 (90d)
POSSA329	Site Area SA329 (90d)	0%	0	0	01-Apr-14*		0					◆ Site Area SA329 (90d)
POSSA340	Site Area SA340 (0d)	0%	0	0	27-Feb-14*		0					◆ Site Area SA340 (0d)
POSSA343	Site Area SA343 (180d)	0%	0	0	27-Feb-14*		0					◆ Site Area SA343 (180d)
POSSA343A	Site Area SA343A (180d)	0%	0	0	27-Feb-14*		0					◆ Site Area SA343A (180d)
POSSA345	Site Area SA345 (0d)	0%	0	0	28-Feb-14*		0					◆ Site Area SA345 (0d)
<b>ZONE 2 (Ch. 5880 to 6930)</b>												
<b>Noise Barrier Along TWSR-West and Laying New Utilities</b>												
<b>Site Clearance &amp; Demolition of Existing Structure</b>												
<b>Demolition Work</b>												
Z2.P2N.1242	Pending for design brief from Villager/ Engineer	40%	18	30	01-Jan-14A	12-Mar-14	-10					
Z2.P2N.1245	Method statement submission/ approval	0%	60	60	13-Mar-14	28-May-14	-10					
<b>NB47 (Ch.5880-5930)-TWSR West Side</b>												
<b>DSD Southern Trunk Sewer, Water Main Fire Main Works</b>												
TSZ10250	Sheet Piling & Excavation(-6m below ground) (along NB47)	0%	18	18	01-Apr-14	25-Apr-14	-94					
TSZ10260	DSD Trunk Sewer laying (along NB47)	0%	18	18	26-Apr-14	19-May-14	-94					
<b>NB48 (Ch.5995-6120)-TWSR West Side</b>												
<b>Noise Barrier Works</b>												
NB00355	NB48 - Pre-drilling	0%	27	27	01-Apr-14	08-May-14	9					
NB00360	NB48 (NB48/1-5 up to THFB) piling (0.19m -54no)	0%	81	81	09-May-14	13-Aug-14	9					
<b>NB49B (Ch.6215-6235)-TWSR West Side</b>												
<b>Noise Barrier Works</b>												
NB00545	NB49B - Pre-drilling	0%	22	22	01-Apr-14	30-Apr-14	-21					
NB00550	NB49B piling (0.19m -22no)	0%	33	33	02-May-14	11-Jun-14	-21					
<b>NB54 (Ch.6240-6280)-TWSR West Side</b>												
<b>Noise Barrier Works</b>												
NB00605	NB54 - ID2-1 Pre-drilling	0%	18	18	02-May-14	23-May-14	-6					
<b>NB57 (Ch.6365-6445)-TWSR West Side</b>												
<b>Noise Barrier Works</b>												
NB00800	NB57 -Pre-drilling	0%	40	40	01-Apr-14	23-May-14	-55					
<b>NB59 (Ch.6490-6590)-TWSR West Side</b>												
<b>Noise Barrier Works</b>												
NB00940	NB59 -Pre-drilling	0%	47	47	01-Apr-14	31-May-14	-42					
<b>NB63 (Ch.6610-6700)-TWSR West Side</b>												
<b>Noise Barrier Works</b>												
NB4550	NB63 - ID3-1 piling (0.19m -18no)-1 rigs	0%	27	27	20-Feb-14	22-Mar-14	-31					
NB4560	NB63 - ID3-1 Footing & Wall Structure	0%	60	60	24-Mar-14	09-Jun-14	52					
<b>DSD Southern Trunk Sewer, Water Main Fire Main Works</b>												
TSZ10300	Sheet Piling & Excavation(-7m below ground) (along NB63)	0%	21	21	01-Apr-14	29-Apr-14	-38					
TSZ10310	DSD Trunk Sewer laying (along NB63)	0%	18	18	30-Apr-14	22-May-14	-38					
<b>DSD Southern Trunk Sewer - Trenchless Construction</b>												
TSZ10950	Construct Pipe jacking pits	0%	60	60	30-Apr-14	12-Jul-14	175					
<b>Bridge Construction</b>												

	Project File: HY/2012/06: IWP Rev. 5 (1402)	<p align="center"><b>Contract No. HY/2012/06</b></p> <p align="center"><b>Widening of Fanling Highway - Tai Hang to Wo Hop Shek Interchange</b></p> <p align="center"><b>3 Month Rolling Program(20-Feb-14)</b></p>	Date	Revision	C..	Ap...
	Layout: 3 Month Rolling Program		07...	IWP Rev 4		
Page 1 of 4			28...	IWP Rev 5		
Primavera Systems, Inc.						



Activity ID	Activity Name	Duration % Complete	Remaining Duration	Original Duration	Start	Finish	Total Float	2014				
								Feb	Mar	Apr	May	
<b>New Tai Hang Footbridge</b>												
<b>General</b>												
THBF0100	Site Clearance	0%	30	30	01-Apr-14	12-May-14	-89					
THBF0330	Structure steel Shop drawing submission (THFB)	0%	60	60	20-Feb-14	07-May-14	802					
THBF0335	Structure steel Shop drawing approval (THFB)	0%	30	30	15-Apr-14	24-May-14	802					
<b>TWSR-East FL Highway S/B Side Section</b>												
THBF0430	Precautionary work for MTRC I&P area	0%	45	45	13-May-14	05-Jul-14	-89					
<b>New Tai Wo Footbridge</b>												
<b>General</b>												
TWFB1010	Site Clearance	0%	30	30	01-Apr-14	12-May-14	15					
TWFB1020	Structure steel Shop drawing submission (TWFB)	0%	90	90	20-Feb-14	12-Jun-14	989					
<b>TWSR-West/ FL Highway NB Side Section</b>												
TWFB1310	TWAB1 - Predrilling	0%	27	27	13-May-14	13-Jun-14	15					
<b>Temporary Tai Wo Footbridge</b>												
<b>Design Works</b>												
TWFB-T1000	Procurement of Temporary bridge Design consultant	0%	52	52	20-Feb-14	25-Apr-14	368					
TWFB-T1010	Design preparation	0%	90	90	26-Apr-14	13-Aug-14	368					
<b>Demolition of Existing Tai Wo Footbridge</b>												
<b>TWSR-West/ FL Highway NB Side Section</b>												
TWFB-DE0900	Site Clearance	0%	30	30	01-Apr-14	12-May-14	773					
<b>Noise Barrier Along Fanling Highway S/B</b>												
<b>NB51 (Ch.5935-6055)-FH S/B Side</b>												
<b>Noise Barrier Works</b>												
NB02250	NB51 ID1-3 (0-25m), 18nos Predrilling	0%	10	10	01-Apr-14	12-Apr-14	484					
NB02260	NB51 ID1-3 (0-25m) 18nos Piling- 1 rigs	0%	27	27	14-Apr-14	20-May-14	484					
<b>NB61A (Ch.6560-6745)-FH S/B Side (MTRC I&amp;P Area)</b>												
<b>Noise Barrier Works</b>												
NB02870	Coordinate with MTRC for Precautionary Measure	70%	18	60	13-Nov-13 A	12-Mar-14	-116					
NB02880	Precautionary Measure installation	0%	26	26	13-Mar-14	12-Apr-14	-116					
NB02940	NB61A D 2-3 (50-75m), 18nos Predrilling	0%	18	18	14-Apr-14	09-May-14	24					
NB02950	NB61A D 2-3 (50-75m) 18nos Piling- 1 rigs	0%	18	18	10-May-14	30-May-14	24					
NB03010	NB61A (75-190m) - Sheet piling & Excavation	0%	26	26	14-Apr-14	19-May-14	-116					
<b>Other Works</b>												
<b>Site Clearance &amp; Demolition of Existing Structure</b>												
<b>General</b>												
Z2.P2N.1000	Liaison with relevant villages houses's owner and related parties	0%	30	30	17-Mar-14	24-Apr-14	-110					
Z2.P2N.1010	Submission of contractor's design for site formation	0%	28	28	25-Apr-14	29-May-14	-110					
Z2.P2N.1030	Submission of DIA & SIA report to DSD	0%	14	14	14-May-14	29-May-14	-110					
<b>South Buffer Zone 1 (SBZ1) (within Zone 2)(Ch.6740 to 6930)</b>												
<b>General</b>												
<b>General</b>												
<b>General</b>												
POSSA328a	Tree Felling/Transplant	0%	30	30	01-Apr-14	12-May-14	11					
POSSA328a10	Site Clearance/ Trip Pit etc	0%	30	30	13-May-14	17-Jun-14	11					
POSSA329a	Tree Felling/Transplant	0%	30	30	01-Apr-14	12-May-14	-116					
POSSA329a10	Site Clearance/ Trip Pit etc	0%	30	30	13-May-14	17-Jun-14	-116					
<b>Noise Barrier Along TWSR-West and Laying New Utilities</b>												
<b>NB64 (Ch.6860-6920)-TWSR West Side</b>												
<b>Noise Barrier Works</b>												
NB001000	NB64 -Pre-drilling	0%	35	35	01-Apr-14	17-May-14	-128					
NB001010	NB64 -piling (0.19m -78no)	0%	90	90	19-May-14	02-Sep-14	-128					
<b>Bridge Construction</b>												
<b>Kau Lung Hang Vehicular Bridge</b>												
<b>General</b>												
Z2.KLH.1070	Consent from Engineer	10.71%	25	28	28-Nov-13 A	20-Mar-14	19					
<b>Demolition of Existing Nam Wa Po Footbridge</b>												
<b>General</b>												

	Project File: HY/2012/06: IWP Rev. 5 (1402) Layout: 3 Month Rolling Program Page 2 of 4 Primavera Systems, Inc.	<b>Contract No. HY/2012/06</b> <b>Widening of Fanling Highway - Tai Hang to Wo Hop Shek Interchange</b> <b>3 Month Rolling Program(20-Feb-14)</b>		Date: 07... IWP Rev 4 Date: 28... IWP Rev 5 C... Ap...
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Activity ID	Activity Name	Duration % Complete	Remaining Duration	Original Duration	Start	Finish	Total Float	2014			
								Feb	Mar	Apr	May
Z2.NWP.0500	Site Clearance	0%	20	20	01-Apr-14	28-Apr-14	-79				
Z2.NWP.1000	Modification of Existing Planter for Pier of Temporary Footbridge	0%	25	25	29-Apr-14	29-May-14	-79				
<b>North Buffer Zone 2 (NBZ2) (within Zone 4) (Ch. 7925 to 8100)</b>											
<b>Site Formation</b>											
<b>Site Formation Works</b>											
<b>Site Formation Work</b>											
Z4SF1060	Backfilling up to formation level for Drainage work	0%	30	30	20-Feb-14	26-Mar-14	-100				
Z4SF1065	Drainage Work	0%	30	30	27-Mar-14	07-May-14	-100				
Z4SF1070	Backfilling (~20000m3)	0%	180	180	08-May-14	09-Dec-14	-100				
<b>Retaining Wall W76</b>											
<b>Structure Works</b>											
RW761080	Base slab - W76 (~7m high)	0%	12	12	20-Feb-14	05-Mar-14	-92				
RW761085	Wall construction - W76 (~7m high)	0%	40	40	06-Mar-14	25-Apr-14	-92				
<b>Bridge Construction</b>											
<b>New Ho Ka Yuen Footbridge</b>											
<b>General</b>											
HKY1020	Site Clearance (TWSR-W side)	0%	30	30	27-Feb-14	02-Apr-14	-68				
HKY1030	Structure steel Shop drawing submission (HKYB)	0%	60	60	20-Feb-14	07-May-14	-11				
HKY1040	Structure steel Shop drawing approval (HKYB)	0%	30	30	15-Apr-14	24-May-14	-11				
<b>TWSR-West/ FL Highway NB Side Section</b>											
HKY1140	HKYP6 - Predrilling	0%	24	24	03-Apr-14	07-May-14	126				
HKY1150	HKYP6 - Pre-bored H pile (8 nos)	0%	24	24	08-May-14	05-Jun-14	126				
HKY1172	HKYP1 - Predrilling	0%	12	12	08-May-14	21-May-14	147				
HKY1220	HKYAB3 - Predrilling	0%	12	12	08-May-14	21-May-14	180				
<b>TWSR-East FL Highway S/B Side Section</b>											
HKY1490	Temp Access formation	60%	18	45	10-Feb-14 A	12-Mar-14	-50				
HKY1500	HKYAB1 - Predrilling	0%	12	12	03-Apr-14	17-Apr-14	-68				
HKY1510	HKYAB1 - Pre-bored H pile (4 nos)	0%	12	12	15-May-14	28-May-14	19				
HKY1770	HKYP5 - Predrilling	0%	12	12	20-Feb-14	05-Mar-14	165				
HKY1820	HKYAB2 - Pre-bored H pile (22 nos)	0%	66	66	20-Feb-14	14-May-14	19				
HKY1830	HKYAB2 - Pile Test	0%	28	28	15-May-14	11-Jun-14	98				
<b>Demolition of Existing Ho Ka Yuen Footbridge</b>											
<b>TWSR-West/ FL Highway NB Side Section</b>											
HKY1880	Construct Temp Ramp for existing HKY footbridge	0%	90	90	03-Apr-14	25-Jul-14	-28				
HKY1900	Erect temp platform for demolishing Ramp & staircase at TWSR-W	0%	45	45	03-Apr-14	31-May-14	18				
<b>ZONE 4 (Ch. 7925 to 8700)</b>											
<b>Noise Barrier Along TWSR-West and Laying New Utilities</b>											
<b>NB77 (Ch.8090-8450)-FH N/B Side</b>											
<b>Noise Barrier Works</b>											
NB4290	NB77 -Pre-drilling (Ch8090-8190)	0%	96	96	27-Feb-14	26-Jun-14	-35				
NB4300	NB77 - piling (NB77/01-08, 0.19m -64no)	0%	96	96	29-Apr-14	22-Aug-14	-29				
<b>Bridge Construction</b>											
<b>New Wo Hop Shek Pedstrian &amp; Cycle Bridge</b>											
<b>General</b>											
WHS1010	Site Clearance & Temp Platform erection (SA340)	0%	45	45	27-Feb-14	24-Apr-14	426				
WHS1020	Structure steel Shop drawing submission (WHSB)	0%	60	60	20-Feb-14	07-May-14	461				
WHS1030	Structure steel Shop drawing approval (WHSB)	0%	30	30	15-Apr-14	24-May-14	461				
<b>TWSR-West/ FL Highway N/B Side Section</b>											
WHS1150	WHSP2 - Predrilling	0%	24	24	12-May-14	09-Jun-14	426				
WHS1230	WHSAB1 - Predrilling	0%	12	12	25-Apr-14	10-May-14	426				
WHS1240	WHSAB1 - Pre-bored H pile (4 nos)	0%	12	12	12-May-14	24-May-14	453				
<b>Crossing Fanling Highway Section</b>											
WHS1450	WHSP1 - Pre-bored H pile (6 nos)	0%	18	18	20-Feb-14	12-Mar-14	875				
WHS1460	WHSP1 - Pile Test	0%	28	28	13-Mar-14	09-Apr-14	1094				

	Project File: HY/2012/06: IWP Rev. 5 (1402) Layout: 3 Month Rolling Program Page 3 of 4 Primavera Systems, Inc.	Contract No. HY/2012/06 <b>Widening of Fanling Highway - Tai Hang to Wo Hop Shek Interchange</b> 3 Month Rolling Program(20-Feb-14)	<table border="1"> <tr> <th>Date</th> <th>Revision</th> <th>C..</th> <th>Ap...</th> </tr> <tr> <td>07...</td> <td>IWP Rev 4</td> <td></td> <td></td> </tr> <tr> <td>28...</td> <td>IWP Rev 5</td> <td></td> <td></td> </tr> </table>	Date	Revision	C..	Ap...	07...	IWP Rev 4			28...	IWP Rev 5		
	Date	Revision	C..	Ap...											
07...	IWP Rev 4														
28...	IWP Rev 5														

Activity ID	Activity Name	Duration % Complete	Remaining Duration	Original Duration	Start	Finish	Total Float	2014			
								Feb	Mar	Apr	May
WHS1470	WHSP1 - Pile cap, Pier and Pier Head	0%	52	52	10-Apr-14	16-Jun-14	875				
<b>TWSR-East FL Highway S/B Side Section</b>											
WHS2045	Temp footbridge construction for pedestrian diversion	0%	40	40	27-Feb-14	15-Apr-14	-111				
WHS2050	North Abutment Wall (AW1) - Predrilling	0%	12	12	16-Apr-14	03-May-14	-111				
WHS2060	North Abutment Wall (AW1) - Pre-bored H pile (4 nos)	0%	16	16	05-May-14	23-May-14	-111				
<b>Fanling Highway Construction</b>											
<b>Drainage &amp; Road Works</b>											
<b>TWSR-East FL Highway S/B Side Section</b>											
RDZ41004	Site Clearance & Tree Felling	0%	70	70	27-Feb-14	26-May-14	-104				
<b>Other Works</b>											
<b>Retaining Wall W77A</b>											
<b>TWSR-East FL Highway S/B Side Section</b>											
RWZ4.1050	Site Clearance	0%	30	30	27-Feb-14	02-Apr-14	-43				
RWZ4.1060	Base slab & Wall (0-3m high)- RW77A (Ch.50-130)	0%	60	60	03-Apr-14	19-Jun-14	-43				
<b>Retaining Wall W77B</b>											
<b>TWSR-East FL Highway S/B Side Section</b>											
RWZ4.1092	Site Clearance	0%	30	30	03-Apr-14	14-May-14	62				
<b>Retaining Wall W78</b>											
<b>TWSR-East FL Highway S/B Side Section</b>											
RWZ4.0900	Site Clearance	0%	30	30	15-May-14	19-Jun-14	92				
<b>TCSS Works</b>											
<b>TCSS Pre-Construction Works</b>											
TCSS0100	Acquire Design Criteria from Drawing & procurement	0%	180	180	20-Feb-14	27-Sep-14	582				

	Project File: HY/2012/06: IWP Rev. 5 (1402) Layout: 3 Month Rolling Program Page 4 of 4 Primavera Systems, Inc.	Contract No. HY/2012/06 <b>Widening of Fanling Highway - Tai Hang to Wo Hop Shek Interchange</b> 3 Month Rolling Program(20-Feb-14)		<table border="1"> <tr> <th>Date</th> <th>Revision</th> <th>C..</th> <th>Ap...</th> </tr> <tr> <td>07...</td> <td>IWP Rev 4</td> <td></td> <td></td> </tr> <tr> <td>28...</td> <td>IWP Rev 5</td> <td></td> <td></td> </tr> </table>	Date	Revision	C..	Ap...	07...	IWP Rev 4			28...	IWP Rev 5		
	Date	Revision	C..	Ap...												
07...	IWP Rev 4															
28...	IWP Rev 5															

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**APPENDIX C  
IMPLEMENTATION SCHEDULE OF  
ENVIRONMENTAL MITIGATION MEASURES  
(EMIS)**

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## **Appendix C - Implementation Schedule of Environmental Mitigation Measures (EMIS)**

### **Air Quality – Schedule of Recommended Mitigation Measures**

<b>Impact</b>	<b>Mitigation Measures</b>	<b>Timing</b>	<b>Implementation Status</b>
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	V
	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.		V
	Effective water sprays shall be used to control potential dust emission sources such as unpaved haul roads and active construction areas.		V
	All spraying of materials and surfaces shall avoid excessive water usage.		V
	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.		V
	Materials shall be dampened, if necessary, before transportation.		V
	Travelling speeds shall be controlled to reduce traffic induced dust dispersion and re-suspension within the site from the operating haul trucks.		V
	Vehicle washing facilities shall be provided to minimize the quantity of material deposited on public roads.		V

### Noise – Schedule of Recommended Mitigation Measures

Impact	Mitigation Measures	Timing	Implementation Status
Noise during construction	Use of silenced plant or plant equipped with mufflers or dampers in substitute of ordinary plant.	During construction	#
	Reduce the number of equipment and their percentage on-time.		#
	3.5 m and 5.5 m high temporary noise barrier at culvert construction work area (Figure 2a of the Environmental Permit).		#
	3 m high temporary noise barrier along the northern edge of Bridge 12 at ground level (Figure 2b of the Environmental Permit).		#
	2 m high temporary noise barrier along the northern edge of Bridge 12 at bridge level (Figure 2b of the Environmental Permit).		#
	2.5 m high temporary noise barrier along Tai Wo Service Road West (Figure 2c of the Environmental Permit).		#
	3.5m and 7m high temporary noise barrier along Tai Wo Services Road West near Tai Hang (Figure 2c of the Environmental Permit).		#
	7 m high temporary noise barrier along Tai Wo Service Road West near Tai Wo Footbridge work area (Figure 2d of the Environmental Permit).		#
	7 m high temporary noise barrier near Kiu Tau Footbridge work area (Figure 2d of the Environmental Permit).		#
	2.5 m high temporary noise barrier near river diversion work area (Figure 2e of the Environmental Permit).		#

**Water Quality – Schedule of Recommended Mitigation Measures**

Impact	Mitigation Measures	Timing	Implementation Status
Water quality during construction	Demolition and reconstruction of bridges <ul style="list-style-type: none"> <li>- Prevent off-site migration through use of sheet piles.</li> <li>- Minimise duration of works as far as practical.</li> <li>- All sewer and drainage connections should be sealed to prevent debris, soil, sand, etc, from entering public sewers/drains.</li> <li>- Site surface runoff should be settled to remove sand/silt before it is discharged into the existing storm drains.</li> </ul>	During construction	#
	Road Widening Works, Earthworks and Culvert Extension Works <ul style="list-style-type: none"> <li>- Wastewater generated from any concrete batching washdown of equipment or similar activities should be discharged into foul sewers, after the removal of settleable solids, and pH adjustment as necessary. All sewage discharges from the study area should meet the TM standards and approval from EPD through the licensing process is required.</li> <li>- Sand traps, oil interceptors and other pollution prevention installations should be provided, properly cleaned and maintained.</li> <li>- Runoff from exposed working areas, unfinished slopes and from unlined temporary channels should be directed to stilling basins and/or silt traps before discharging to the drainage outfalls.</li> <li>- Regular inspections of stilling basins and/or silt traps is required to ensure that sediment is not conveyed into the existing drainage system.</li> <li>- Open stockpiles should be covered with a tarpaulin cover.</li> <li>- During the wet season, any exposed top soils should be covered with a tarpaulin, shotcreted or hydroseeded.</li> <li>- Sand and silt from wash-water from vehicle washing should be settled out before discharging into storm drains.</li> <li>- Fuels should be stored in bunded areas such that spillage can be easily collected.</li> </ul>		V

### Waste – Schedule of Recommended Mitigation Measures

Impact	Mitigation Measures	Timing	Implementation Status
Waste management during construction	<b>General Waste</b> <ul style="list-style-type: none"> <li>- Transport of wastes off site as soon as possible.</li> <li>- Maintenance of accurate waste records.</li> <li>- Minimisation of waste generation for disposal (via reduction/recycling/re-use).</li> <li>- No on-site burning will be permitted.</li> <li>- Use of re-useable metal hoardings/signboards.</li> </ul>	During construction	V
	<b>Vegetation from site clearance</b> <ul style="list-style-type: none"> <li>- Segregation of materials to facilitate disposal.</li> <li>- Mulching to reduce bulk and where possible review opportunities for the possible beneficial use within landscaping areas.</li> </ul>		V
	<b>Demolition Wastes</b> <ul style="list-style-type: none"> <li>- Segregation of materials to facilitate disposal.</li> <li>- Appropriate stockpile management.</li> </ul>		V
	<b>Excavated Materials</b> <ul style="list-style-type: none"> <li>- Segregation of materials to facilitate disposal / reuse.</li> <li>- Appropriate stockpile management.</li> <li>- Re-use of excavated material on or off site (where possible).</li> <li>- Special handling and disposal procedures in the event that contaminated materials are excavated.</li> </ul>		V
	<b>Construction Wastes</b> <ul style="list-style-type: none"> <li>- Segregation of materials to facilitate recycling/reuse (within designated area in appropriate containers/stockpiles).</li> <li>- Appropriate stockpile management.</li> <li>- Planning to reduce over ordering and waste generation.</li> <li>- Recycling and re-use of materials where possible (e.g. metal, wood from formwork)</li> <li>- For material which cannot be re-used/recycled, collection should be carried out by an approved waste contractor for landfill disposal.</li> </ul>		V
	<b>Bentonite Slurries</b> <ul style="list-style-type: none"> <li>- Bentonite slurries should be reused as far as possible.</li> <li>- Disposal in accordance with Practice Note For Professional Persons ProPECC PN 1/94.</li> </ul>		#

	<p>Chemical Wastes</p> <ul style="list-style-type: none"> <li>- Storage within locked, covered and bunded area.</li> <li>- The storage area shall not be located adjacent to sensitive receivers e.g. drains.</li> <li>- Minimise waste production and recycle oils/solvents where possible.</li> <li>- A spill response procedure shall be in place and absorption material available for minor spillages.</li> <li>- Use appropriate and labelled containers.</li> <li>- Educate site workers on site cleanliness/waste management procedures.</li> <li>- If chemical wastes are to be generated, the contractor must register with EPD as a chemical waste producer.</li> <li>- The chemical wastes shall be collected by a licensed chemical waste collector.</li> </ul>		<p>@</p>
	<p>Municipal Wastes</p> <ul style="list-style-type: none"> <li>- Waste shall be stored within a temporary refuse collection facility, in appropriate containers prior to collection and disposal.</li> <li>- Regular, daily collections are required by an approved waste collector.</li> </ul>		<p>V</p>



### Ecology – Schedule of Recommended Mitigation Measures

Impact	Mitigation Measures	Timing	Implementation Status
Ecology during construction	<p>Accurate Delineation of Works Area</p> <ul style="list-style-type: none"> <li>- Boundaries of proposed works areas shall be clearly identified and separated from external areas by a physical barrier to prevent encroachment of adjacent habitats.</li> <li>- Individual trees which fall within the works areas but which work plans do not require removal are to be retained and fenced off to maximize protection.</li> </ul>	During construction	V
	<p>Vegetation Clearance</p> <ul style="list-style-type: none"> <li>- No fires shall be lit within the works area for the purpose of burning cleared vegetation.</li> <li>- The Contractor shall give consideration to mulching the cleared vegetation for recycling within the works area / adjacent land.</li> </ul>		V
	<p>Dust generation</p> <p>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:</p> <ul style="list-style-type: none"> <li>- Vehicle washing facilities to be provided at every discernible or designated vehicle exit point;</li> <li>- All temporary site access roads shall be sprayed with water to suppress dust as necessary;</li> <li>- All dusty materials should be sprayed with water immediately prior to any handling; and</li> <li>- All debris should be covered entirely by impervious sheeting or stored in a sheltered debris collection area.</li> </ul>		V
	<p>Surface Run-off</p> <p>In general, mitigation measures shall be in accordance with ProPECC PN1/94 on 'Construction Site Drainage'. Key measures include:</p> <ul style="list-style-type: none"> <li>- Bund and cover stock piles to avoid run-off;</li> <li>- Channel any run-off through a system of oil, grease and sediment / silt traps and reuse water on site where ever practical;</li> <li>- All vehicle maintenance to be undertaken within a bunded area; and</li> <li>- Maximise vegetation retention on-site to maximise absorption (minimise transport).</li> </ul>		V

### Landscape and Visual Impact – Schedule of Recommended Mitigation Measures

Impact	Mitigation Measures	Timing	Responsibility
Landscape & Visual during construction	<b>Preservation of Existing Vegetation</b> - Trees identified for retention within the project limit would be protected during the works; - The tree transplanting and planting works shall be implemented by approved Landscape Contractors.	During construction	V
	<b>Temporary Works Areas</b> - 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.		V
	<b>Hoarding</b> - A hoarding would be erected where practicable in the most visually sensitive locations to screen the temporary construction works from the local VSRs.		V
	<b>Top Soils</b> - 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.		#
	<b>Protection of Important Landscape Features</b> - Important features such as temples, Island House and kilns within the study area, although remote from the proposed works retained and adequately protected.		#

**Legend:**

V = implemented;

x = not implemented;

@ = partially implemented;

N/A = not applicable - No such work was undertaken or no such material was used on site;

# = to be implemented.

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**APPENDIX D  
SUMMARY OF ACTION AND LIMIT LEVELS**

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## Appendix D - Summary of Action and Limit Levels

Table 1 – Action and Limit Levels for 1-hour TSP

Location	Action Level	Limit Level
AM2	317.8 µg/m <sup>3</sup>	500 µg/m <sup>3</sup>

Table 2 – Action and Limit Levels for 24-hour TSP

Location	Action Level	Limit Level
AM2	200.7 µg/m <sup>3</sup>	260 µg/m <sup>3</sup>

Table 3 – Action and Limit Levels for Construction Noise (0700-1900 hrs of normal weekdays)

Location	Action Level	Limit Level
M2	When one documented complaint, related to 0700 – 1900 hours on normal weekdays, is received from any one of the sensitive receivers	75 dB(A)
M3*		65/70 dB(A)

\*Daytime noise Limit Level of 70 dB(A) applies to education institutions, while 65dB(A) applies during school examination period

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**APPENDIX E  
CALIBRATION CERTIFICATES OF  
MONITORING EQUIPMENTS**

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**Total Suspended Particulates (TSP) Sampler**  
**Field Calibration Report**

Station Fanling Government Secondary School (AM2)  
 Date: 11-Dec-13  
 Model No: TE-5170  
 Equipment No.: A-001-74T

Operator: Shum Kam Yuen  
 Next Due Date: 11-Feb-14  
 Verified Against: O.T.S -- 988  
 Expiration Date: 20-May-2014

Ambient Condition				
Temperature, Ta	289.0	Kelvin	Pressure, Pa	756.9 mmHg

Orifice Transfer Standard Information					
Equipment No.:	988	Slope, mc	1.99238	Intercept, bc	-0.00351
Last Calibration Date:	20-May-13	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	20-May-14				

Calibration of TSP Sampler					
Calibration Point	H in. of water	$[H \times (Pa/760) \times (298/Ta)]^{1/2}$ X - axis	Qstd (m <sup>3</sup> /min) X - axis	W in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	6.2	2.52	1.27	5.1	2.29
2	5.0	2.27	1.14	4.1	2.05
3	4.6	2.17	1.09	3.5	1.90
4	3.8	1.98	0.99	3.1	1.78
5	2.2	1.50	0.76	1.8	1.36

**By Linear Regression of Y on X**

Slope , mw = 1.8045 Intercept, bw = -0.0188

Correlation Coefficient\* = 0.9969

**Set Point Calculation**

From the TSP Field Calibration Curve, take Qstd = 1.21 m<sup>3</sup>/min (43 CFM)  
 From the Regression Equation, the "Y" value according to

$m \times Qstd + b = [W \times (Pa/760) \times (298/Ta)]^{1/2}$

Therefore, Set Point W =  $(m \times Qstd + b)^2 \times (760 / Pa) \times (Ta / 298) =$  4.56

\*If Correlation Coefficient < 0.990, check and recalibrate again.

Remarks: \_\_\_\_\_

QC Reviewer: Y T Leung Signature: Date: 11-Dec-13

**Total Suspended Particulates (TSP) Sampler  
Field Calibration Report**

Station Fanling Government Secondary School (AM2)  
 Date: 8-Feb-14  
 Model No: TE-5170  
 Equipment No.: A-001-74T

Operator: Shum Kam Yuen  
 Next Due Date: 8-May-14  
 Verified Against: O.T.S -- 988  
 Expiration Date: 20-May-2014

Ambient Condition			
Temperature, Ta	289.6	Kelvin	Pressure, Pa
			758.6 mmHg

Orifice Transfer Standard Information					
Equipment No.:	988	Slope, mc	1.99238	Intercept, bc	-0.00351
Last Calibration Date:	20-May-13	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	20-May-14				

Calibration of TSP Sampler					
Calibration Point	H in. of water	$[H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m <sup>3</sup> /min) X - axis	W in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	6.3	2.54	1.28	5.2	2.31
2	5.1	2.29	1.15	4.1	2.05
3	4.6	2.17	1.09	3.4	1.87
4	3.7	1.95	0.98	3.0	1.76
5	2.3	1.54	0.77	1.6	1.28

By Linear Regression of Y on X  
 Slope , mw = 1.9796 Intercept, bw = -0.2325  
 Correlation Coefficient\* = 0.9948

**Set Point Calculation**

From the TSP Field Calibration Curve, take Qstd = 1.21 m<sup>3</sup>/min (43 CFM)  
 From the Regression Equation, the "Y" value according to

$$m \times Qstd + b = [W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point W =  $(m \times Qstd + b)^2 \times (760 / Pa) \times (Ta / 298) =$  4.55

\*If Correlation Coefficient < 0.990, check and recalibrate again.

Remarks: \_\_\_\_\_

QC Reviewer: H Sun Signature: [Signature] Date: 12/2/14



TISCH ENVIRONMENTAL, INC.  
 145 SOUTH MIAMI AVE.  
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 513.467.9009 FAX  
 WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 20, 2013 Rootsometer S/N 0438320 Ta (K) - 297  
 Operator Tisch Orifice I.D. - 0988 Pa (mm) - 751.84

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.3900	3.2	2.00
2	NA	NA	1.00	0.9720	6.4	4.00
3	NA	NA	1.00	0.8670	7.9	5.00
4	NA	NA	1.00	0.8270	8.7	5.50
5	NA	NA	1.00	0.6800	12.6	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9884	0.7110	1.4090	0.9957	0.7163	0.8889
0.9842	1.0125	1.9926	0.9915	1.0201	1.2570
0.9821	1.1327	2.2278	0.9894	1.1412	1.4054
0.9811	1.1863	2.3365	0.9884	1.1952	1.4740
0.9759	1.4352	2.8179	0.9832	1.4459	1.7777
Qstd slope (m) = 1.94727			Qa slope (m) = 1.21935		
intercept (b) = 0.02332			intercept (b) = 0.01471		
coefficient (r) = 0.99998			coefficient (r) = 0.99998		
y axis = SQRT[H2O(Pa/760)(298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

$$Vstd = \text{Diff. Vol} [(Pa - \text{Diff. Hg}) / 760] (298 / Ta)$$

$$Qstd = Vstd / \text{Time}$$

$$Va = \text{Diff Vol} [(Pa - \text{Diff Hg}) / Pa]$$

$$Qa = Va / \text{Time}$$

For subsequent flow rate calculations:

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

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



## EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor  
 Manufacturer/Brand: SIBATA  
 Model No.: LD-3  
 Equipment No.: A.005.07a  
 Sensitivity Adjustment Scale Setting: 557 CPM

Operator: Mike Shek (MSKM)

### Standard Equipment

Equipment: Rupprecht & Patashnick TEOM®  
 Venue: Cyberport (Pui Ying Secondary School)  
 Model No.: Series 1400AB  
 Serial No.: Control: 140AB219899803  
 Sensor: 1200C143659803 K<sub>o</sub>: 12500  
 Last Calibration Date\*: 18 May 2013

\*Remarks: Recommended interval for hardware calibration is 1 year

### Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): 557 CPM  
 Sensitivity Adjustment Scale Setting (After Calibration): 557 CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration <sup>1</sup> (mg/m <sup>3</sup> ) Y-axis	Total Count <sup>2</sup>	Count/ Minute <sup>3</sup> X-axis
			Temp (°C)	R.H. (%)			
1	18-05-13	12:30 - 13:30	28.1	78	0.04714	1887	31.45
2	18-05-13	13:30 - 14:30	28.1	78	0.04932	1970	32.83
3	18-05-13	14:30 - 15:30	28.2	77	0.05156	2056	34.27
4	18-05-13	15:30 - 16:30	28.1	78	0.05083	2026	33.77

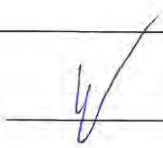
Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®  
 2. Total Count was logged by Laser Dust Monitor  
 3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X

Slope (K-factor): 0.0015  
 Correlation coefficient: 0.9978

Validity of Calibration Record: 17 May 2014

Remarks:

QC Reviewer: YW Fung Signature:  Date: 20 May 2013

## EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor  
 Manufacturer/Brand: SIBATA  
 Model No.: LD-3  
 Equipment No.: A.005.09a  
 Sensitivity Adjustment Scale Setting: 797 CPM

Operator: Mike Shek (MSKM)

### Standard Equipment

Equipment: Rupprecht & Patashnick TEOM®  
 Venue: Cyberport (Pui Ying Secondary School)  
 Model No.: Series 1400AB  
 Serial No: Control: 140AB219899803  
 Sensor: 1200C143659803 K<sub>0</sub>: 12500  
 Last Calibration Date\*: 18 May 2013

\*Remarks: Recommended interval for hardware calibration is 1 year

### Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): 797 CPM  
 Sensitivity Adjustment Scale Setting (After Calibration): 797 CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration <sup>1</sup> (mg/m <sup>3</sup> ) Y-axis	Total Count <sup>2</sup>	Count/ Minute <sup>3</sup> X-axis
			Temp (°C)	R.H. (%)			
1	18-05-13	12:30 - 13:30	28.1	78	0.04714	1885	31.42
2	18-05-13	13:30 - 14:30	28.1	78	0.04932	1965	32.75
3	18-05-13	14:30 - 15:30	28.2	77	0.05156	2059	34.32
4	18-05-13	15:30 - 16:30	28.1	78	0.05083	2024	33.73

Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®  
 2. Total Count was logged by Laser Dust Monitor  
 3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X

Slope (K-factor): 0.0015  
 Correlation coefficient: 0.9973

Validity of Calibration Record: 17 May 2014

Remarks:

QC Reviewer: YW Fung Signature:  Date: 20 May 2013

## EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor  
 Manufacturer/Brand: SIBATA  
 Model No.: LD-3  
 Equipment No.: A.005.11a  
 Sensitivity Adjustment Scale Setting: 799 CPM

Operator: Mike Shek (MSKM)

### Standard Equipment

Equipment: Rupprecht & Patashnick TEOM®  
 Venue: Cyberport (Pui Ying Secondary School)  
 Model No.: Series 1400AB  
 Serial No: Control: 140AB219899803  
 Sensor: 1200C143659803 K<sub>0</sub>: 12500  
 Last Calibration Date\*: 18 May 2013

\*Remarks: Recommended interval for hardware calibration is 1 year

### Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): 799 CPM  
 Sensitivity Adjustment Scale Setting (After Calibration): 799 CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration <sup>1</sup> (mg/m <sup>3</sup> ) Y-axis	Total Count <sup>2</sup>	Count/ Minute <sup>3</sup> X-axis
			Temp (°C)	R.H. (%)			
1	18-05-13	12:15 - 13:15	28.1	78	0.04685	1871	31.18
2	18-05-13	13:15 - 14:15	28.1	78	0.04941	1979	32.98
3	18-05-13	14:15 - 15:15	28.2	77	0.05127	2055	34.25
4	18-05-13	15:15 - 16:15	28.1	78	0.05060	2021	33.68

- Note: 1. Monitoring data was measured by Rupprecht & Patashnick TEOM®  
 2. Total Count was logged by Laser Dust Monitor  
 3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X

Slope (K-factor): 0.0015  
 Correlation coefficient: 0.9976

Validity of Calibration Record: 17 May 2014

Remarks:

QC Reviewer: YW Fung

Signature: 

Date: 20 May 2013

## EQUIPMENT CALIBRATION RECORD

Type: Laser Dust Monitor  
 Manufacturer/Brand: SIBATA  
 Model No.: LD-3B  
 Equipment No.: A.005.13a  
 Sensitivity Adjustment Scale Setting: 643 CPM

Operator: Mike Shek (MSKM)

### Standard Equipment

Equipment: Rupprecht & Patashnick TEOM®  
 Venue: Cyberport (Pui Ying Secondary School)  
 Model No.: Series 1400AB  
 Serial No: Control: 140AB219899803  
 Sensor: 1200C143659803 K<sub>0</sub>: 12500  
 Last Calibration Date\*: 18 May 2013

\*Remarks: Recommended interval for hardware calibration is 1 year

### Calibration Result

Sensitivity Adjustment Scale Setting (Before Calibration): 643 CPM  
 Sensitivity Adjustment Scale Setting (After Calibration): 643 CPM

Hour	Date (dd-mm-yy)	Time	Ambient Condition		Concentration <sup>1</sup> (mg/m <sup>3</sup> ) Y-axis	Total Count <sup>2</sup>	Count/ Minute <sup>3</sup> X-axis
			Temp (°C)	R.H. (%)			
1	18-05-13	12:15 - 13:15	28.1	78	0.04685	1867	31.12
2	18-05-13	13:15 - 14:15	28.1	78	0.04941	1975	32.92
3	18-05-13	14:15 - 15:15	28.2	77	0.05127	2048	34.13
4	18-05-13	15:15 - 16:15	28.1	78	0.05060	2017	33.62

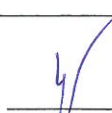
- Note:
1. Monitoring data was measured by Rupprecht & Patashnick TEOM®
  2. Total Count was logged by Laser Dust Monitor
  3. Count/minute was calculated by (Total Count/60)

By Linear Regression of Y or X

Slope (K-factor): 0.0015  
 Correlation coefficient: 0.9986

Validity of Calibration Record: 17 May 2014

Remarks:

QC Reviewer: YW Fung Signature:  Date: 20 May 2013



## CERTIFICATE OF CALIBRATION

Certificate No.: 13CA1107 01-01 Page 1 of 2

### Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	Rion Co., Ltd.	,	Rion Co., Ltd.
Type/Model No.:	NL-31	,	UC-53A
Serial/Equipment No.:	00320528 / N.007.03A	,	90565
Adaptors used:	-	,	-

### Item submitted by

Customer Name: AECOM ASIA CO., LTD.  
Address of Customer: -  
Request No.: -  
Date of receipt: 07-Nov-2013

Date of test: 08-Nov-2013

### Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	22-Jun-2014	CIGISMEC
Signal generator	DS 360	33873	15-Apr-2014	CEPREI
Signal generator	DS 360	61227	15-Apr-2014	CEPREI

### Ambient conditions

Temperature: 22 ± 1 °C  
Relative humidity: 60 ± 10 %  
Air pressure: 1000 ± 10 hPa

### Test specifications

- The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.
- The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure response of the Sound Level Meter.

### Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:

Huang Jian Min/Feng Jun Qi

Date: 11-Nov-2013

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



## CERTIFICATE OF CALIBRATION

Certificate No.: 13CA0305 01-01 Page 1 of 2

### Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2250-L	,	4950
Serial/Equipment No.:	2681366 (N.011.01)	,	2665582
Adaptors used:	-	,	-

### Item submitted by

Customer Name: AECOM ASIA CO LIMITED  
Address of Customer: -  
Request No.: -  
Date of receipt: 05-Mar-2013

Date of test: 05-Mar-2013

### Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-May-2013	CIGISMEC
Signal generator	DS 360	33873	29-May-2013	CEPREI
Signal generator	DS 360	61227	29-May-2013	CEPREI

### Ambient conditions

Temperature: 21 ± 1 °C  
Relative humidity: 60 ± 10 %  
Air pressure: 1000 ± 10 hPa

### Test specifications

- The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of ±20%.
- The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsiveness of the Sound Level Meter.

### Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:

  
Huang Jian Min/Feng Jun Qi

Date: 05-Mar-2013

Company Chop:



**Comments:** The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



## CERTIFICATE OF CALIBRATION

Certificate No.: 13CA1107 01-02

Page: 1 of 2

### Item tested

Description: Acoustical Calibrator (Class 1)  
Manufacturer: Rion Co., Ltd.  
Type/Model No.: NC-73  
Serial/Equipment No.: 10307223 / N.004.08  
Adaptors used: -

### Item submitted by

Customer: AECOM ASIA CO., LTD.  
Address of Customer: -  
Request No.: -  
Date of receipt: 07-Nov-2013

Date of test: 08-Nov-2013

### Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	17-Apr-2014	SCL
Preamplifier	B&K 2673	2239857	16-Apr-2014	CEPREI
Measuring amplifier	B&K 2610	2346941	24-Apr-2014	CEPREI
Signal generator	DS 360	61227	15-Apr-2014	CEPREI
Digital multi-meter	34401A	US36087050	10-Dec-2013	CEPREI
Audio analyzer	8903B	GB41300350	15-Apr-2014	CEPREI
Universal counter	53132A	MY40003662	15-Apr-2014	CEPREI

### Ambient conditions

Temperature:  $22 \pm 1$  °C  
Relative humidity:  $60 \pm 10$  %  
Air pressure:  $1000 \pm 10$  hPa

### Test specifications

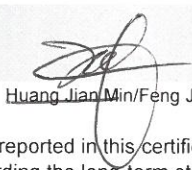
- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

### Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on **page 2** of this certificate.

Approved Signatory:

  
Huang Jian Min/Feng Jun Qi

Date: 11-Nov-2013

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



## CERTIFICATE OF CALIBRATION

Certificate No.: 13CA0325 01-03

Page: 1 of 2

### Item tested

Description: Acoustical Calibrator (Class 1)  
Manufacturer: Rion Co., Ltd.  
Type/Model No.: NC-73  
Serial/Equipment No.: 10186482 / N.004.09  
Adaptors used: -

### Item submitted by

Customer: AECOM ASIA CO., LTD.  
Address of Customer: -  
Request No.: -  
Date of receipt: 25-Mar-2013

Date of test: 26-Mar-2013

### Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	29-May-2013	SCL
Preamplifier	B&K 2673	2239857	17-Dec-2013	CEPREI
Measuring amplifier	B&K 2610	2346941	17-Dec-2013	CEPREI
Signal generator	DS 360	61227	29-May-2013	CEPREI
Digital multi-meter	34401A	US36087050	10-Dec-2013	CEPREI
Audio analyzer	8903B	GB41300350	29-May-2013	CEPREI
Universal counter	53132A	MY40003662	29-May-2013	CEPREI

### Ambient conditions

Temperature:  $22 \pm 1$  °C  
Relative humidity:  $60 \pm 10$  %  
Air pressure:  $1000 \pm 10$  hPa

### Test specifications

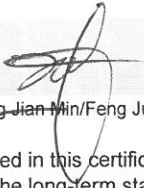
- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

### Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on page 2 of this certificate.

Approved Signatory:

  
Huang Jian Min/Feng Jun Qi

Date: 26-Mar-2013

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



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**APPENDIX F  
EM&A MONITORING SCHEDULES**

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**Contract No. HY/2012/06**  
**Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange**  
**Tentative Impact Monitoring and Audit Schedule for February 2014**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Feb
2-Feb	3-Feb	4-Feb	5-Feb	6-Feb	7-Feb	8-Feb
			1-hr TSP 24-hr TSP Noise			1-hr TSP 24-hr TSP
9-Feb	10-Feb	11-Feb	12-Feb	13-Feb	14-Feb	15-Feb
					1-hr TSP 24-hr TSP Noise	
16-Feb	17-Feb	18-Feb	19-Feb	20-Feb	21-Feb	22-Feb
				1-hr TSP 24-hr TSP Noise		
23-Feb	24-Feb	25-Feb	26-Feb	27-Feb	28-Feb	
			1-hr TSP 24-hr TSP Noise			

**Contract No. HY/2012/06**  
**Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange**  
**Tentative Impact Monitoring and Audit Schedule for March 2014**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1-Mar
2-Mar	3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	8-Mar
		1-hr TSP 24-hr TSP Noise				
9-Mar	10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar
	1-hr TSP 24-hr TSP Noise					1-hr TSP 24-hr TSP
16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar
					1-hr TSP 24-hr TSP Noise	
23-Mar	24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	29-Mar
				1-hr TSP 24-hr TSP Noise		
30-Mar	31-Mar					

The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

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**APPENDIX G  
IMPACT AIR QUALITY MONITORING  
RESULTS AND THEIR GRAPHICAL  
PRESENTATION**

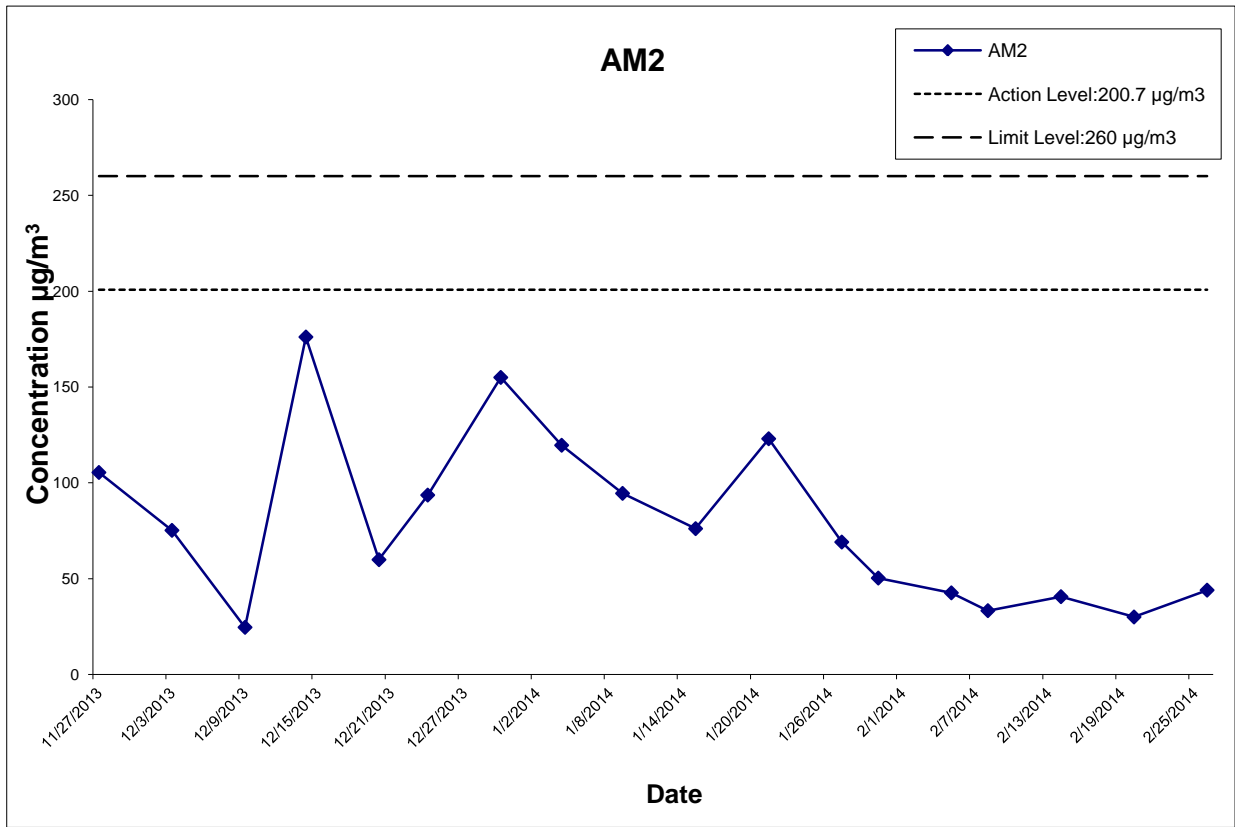
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**Appendix G**  
**Impact Air Quality Monitoring Results**

**24-hour TSP Monitoring Results at Station AM2 (Fanling Government Secondary School)**

Date	Weather Condition	Air Temp. (°C)	Atmospheric Pressure(hPa)	Flow Rate (m <sup>3</sup> /min.)		Av. flow (m <sup>3</sup> /min)	Total vol. (m <sup>3</sup> )	Filter Weight (g)		Particulate weight(g)	Elapse Time		Sampling Time(hrs.)	Conc. (µg/m <sup>3</sup> )	Actino Level (µg/m <sup>3</sup> )	Limit Level (µg/m <sup>3</sup> )
				Initial	Final			Initial	Final		Initial	Final				
5-Feb-14	Sunny	17.1	1013.9	1.314	1.314	1.314	1892.2	2.6918	2.7725	0.0807	3513.02	3537.02	24.00	42.6	200.7	260
8-Feb-14	Rainy	16.6	1011.4	1.314	1.314	1.314	1892.2	2.7252	2.7883	0.0631	3537.02	3561.02	24.00	33.3	200.7	260
14-Feb-14	Fine	10.6	1022.1	1.314	1.314	1.314	1892.2	2.6647	2.7415	0.0768	3561.02	3585.02	24.00	40.6	200.7	260
20-Feb-14	Fine	12.3	1024.8	1.314	1.314	1.314	1892.2	2.6785	2.7352	0.0567	3585.02	3609.02	24.00	30.0	200.7	260
26-Feb-14	Sunny	20.2	1018.0	1.314	1.314	1.314	1892.2	2.7061	2.7893	0.0832	3609.02	3633.02	24.00	44.0	200.7	260
													Average	38.1		
													Min	30.0		
													Max	44.0		



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CONTRACT NO. HY/2012/06  
 WIDENING OF FANLING HIGHWAY  
 - TAI HANG TO WO HOP SHEK INTERCHANGE



Graphical Presentation of Impact 24-hour TSP Monitoring Results

Project No.: 60307376

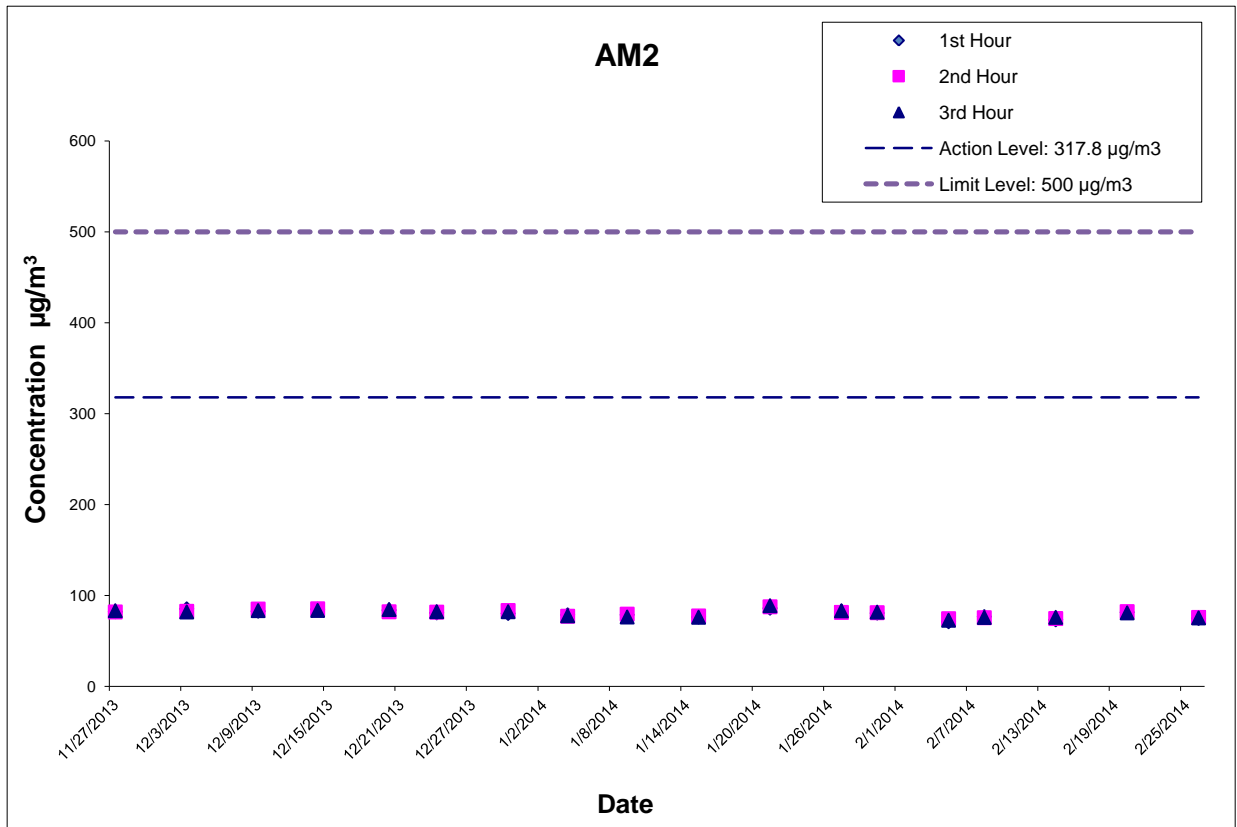
Date: Mar-14

Appendix G

**Appendix G**  
**Impact Air Quality Monitoring Results**

**1-hour TSP Monitoring Results at Station AM2**  
**(Fanling Government Secondary School)**

Date	Start Time (hh:mm)	1st Hour Conc. ( $\mu\text{g}/\text{m}^3$ )	2nd Hour Conc. ( $\mu\text{g}/\text{m}^3$ )	3rd Hour Conc. ( $\mu\text{g}/\text{m}^3$ )
5-Feb-14	10:00	71.0	74.3	72.6
8-Feb-14	13:05	76.6	75.4	75.7
14-Feb-14	13:40	73.1	74.5	75.8
20-Feb-14	15:05	81.4	82.1	80.7
26-Feb-14	13:10	74.6	75.7	75.2
			Average	75.9
			Min	71.0
			Max	82.1



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CONTRACT NO. HY/2012/06  
 WIDENING OF FANLING HIGHWAY  
 - TAI HANG TO WO HOP SHEK INTERCHANGE



Graphical Presentation of Impact 1-hour TSP Monitoring Results



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**APPENDIX H  
METEOROLOGICAL DATA FOR THE  
REPORTING MONTH**

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**Extract of Meteorological Observations for Tai Po Automatic Weather Station,  
February 2014**

Date	Mean Pressure at M.S.L. (hPa)	Air Temperature			Mean Dew Point Temperature (deg C)	Relative Humidity		
		Max. (deg C)	Mean (deg C)	Min. (deg C)		Max. (%)	Mean (%)	Min. (%)
1-Feb	1015.4	23.2	19.1	16.2	15.8	96	82	64
2-Feb	1011.4	24.5	19.3	15	14.8	95	77	52
3-Feb	1009.9	27.6	20.1	15.3	14	88	70	40
4-Feb	1013.4	19.8	17.6	16.4	14.2	92	80	69
5-Feb	1013.9	18.7	17.2	16.1	13.4	91	79	71
6-Feb	1012.1	20.9	18.2	16.4	16	94	87	76
7-Feb	1010.9	21.3	19.3	17.8	17.4	93	89	82
8-Feb	1011.7	19.3	15.2	13.6	13	97	87	72
9-Feb	1012.8	16.4	13.4	8.0	12.1	96	92	83
10-Feb	1019.8	8.6	7.7	6.6	2.6	93	70	58
11-Feb	1020.6	7.8	6.7	5.9	-0.2	68	61	53
12-Feb	1019.4	8.0	6.6	4.9	3.8	94	83	64
13-Feb	1022.2	8.0	6.8	5.9	4.6	94	86	65
14-Feb	1022.6	13.9	9.5	6.7	2.6	75	62	45
15-Feb	1020.9	13.9	10.7	7.6	5.8	82	72	65
16-Feb	1018.6	15.7	14.5	13.7	11.9	92	85	74
17-Feb	1018.1	19.6	17.2	15.2	16.1	97	93	84
18-Feb	1016.7	22	16.3	10.8	14.4	98	89	70
19-Feb	1022.4	11	8.9	7.0	3.6	94	70	53
20-Feb	1025.2	17.6	10.6	4.4	2.7	84	61	26
21-Feb	1024.8	15.4	12.9	8.9	7.8	93	72	54
22-Feb	1023.4	17.1	14.6	13	8.7	81	68	48
23-Feb	1022.9	18.7	16.2	14.5	11.3	86	73	53
24-Feb	1020.7	20.5	17.1	14	13	90	77	59
25-Feb	1018.6	19.7	18	16.5	15.7	94	86	77
26-Feb	1018.1	23.4	19.5	17.5	17.6	97	89	69
27-Feb	1019	21.5	19.1	17.9	16.9	96	88	78
28-Feb	1017.1	19.3	18.2	17.5	15.7	91	86	80
<b>Mean</b>	1017.9	17.6	14.7	12.3	10.9	91	79	64
<b>Maximum</b>	1025.2	27.6	20.1	17.9	17.6	98	93	84
<b>Minimum</b>	1009.9	7.8	6.6	4.4	-0.2	68	61	26

**Extract of Meteorological Observations for Tai Po Automatic Weather Station,  
February 2014**

<b>Date</b>	<b>Total Rainfall (mm)</b>	<b>Prevailing Wind Direction (degrees)</b>	<b>Mean Wind Speed (km/h)</b>
1-Feb	*****	***	*****
2-Feb	*****	***	*****
3-Feb	*****	***	*****
4-Feb	*****	***	*****
5-Feb	*****	***	*****
6-Feb	*****	***	*****
7-Feb	*****	***	*****
8-Feb	*****	***	*****
9-Feb	*****	***	*****
10-Feb	*****	***	*****
11-Feb	*****	***	*****
12-Feb	*****	***	*****
13-Feb	*****	***	*****
14-Feb	*****	***	*****
15-Feb	*****	***	*****
16-Feb	*****	***	*****
17-Feb	*****	***	*****
18-Feb	*****	***	*****
19-Feb	*****	***	*****
20-Feb	*****	***	*****
21-Feb	*****	***	*****
22-Feb	*****	***	*****
23-Feb	*****	***	*****
24-Feb	*****	***	*****
25-Feb	*****	***	*****
26-Feb	*****	***	*****
27-Feb	*****	***	*****
28-Feb	*****	***	*****
<b>Mean</b>	-----	***	*****
<b>Total</b>	*****	---	-----
<b>Maximum</b>	*****	---	*****
<b>Minimum</b>	*****	---	*****

\*\*\* unavailable

# missing (less than 24 hourly observations a day)

Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

**Extract of Meteorological Observations for Tai Mei Tuk Automatic Weather Station,  
February 2014**

Date	Mean Pressure at M.S.L. (hPa)	Air Temperature			Mean Dew Point Temperature (deg C)	Relative Humidity		
		Max. (deg C)	Mean (deg C)	Min. (deg C)		Max. (%)	Mean (%)	Min. (%)
1-Feb	*****	26.2	20.2	16.9	****	***	***	***
2-Feb	*****	27.2	20.3	15.8	****	***	***	***
3-Feb	*****	29.1	20.9	15.8	****	***	***	***
4-Feb	*****	19.8	17.6	16.2	****	***	***	***
5-Feb	*****	22.3	17.6	15.9	****	***	***	***
6-Feb	*****	23.5	18.7	15.9	****	***	***	***
7-Feb	*****	23.9	20.2	17.9	****	***	***	***
8-Feb	*****	19.4	15.5	14.4	****	***	***	***
9-Feb	*****	16.2	13.5	8.2	****	***	***	***
10-Feb	*****	9.1	7.8	6.9	****	***	***	***
11-Feb	*****	9.4	7.1	6.1	****	***	***	***
12-Feb	*****	9.4	7.6	5.9	****	***	***	***
13-Feb	*****	9.0	7.7	6.8	****	***	***	***
14-Feb	*****	14.8	10	7.2	****	***	***	***
15-Feb	*****	13.5	11.1	7.7	****	***	***	***
16-Feb	*****	15.5	14.5	13.3	****	***	***	***
17-Feb	*****	22.9	18	15.1	****	***	***	***
18-Feb	*****	23.1	17	10.5	****	***	***	***
19-Feb	*****	11.4	8.8	5.9	****	***	***	***
20-Feb	*****	18.6	11.5	5.3	****	***	***	***
21-Feb	*****	16.7	13.5	9.6	****	***	***	***
22-Feb	*****	21	14.8	12	****	***	***	***
23-Feb	*****	20.9	16.3	13.7	****	***	***	***
24-Feb	*****	23.1	17.9	14.1	****	***	***	***
25-Feb	*****	23.2	18.8	17.1	****	***	***	***
26-Feb	*****	25.4	20.2	17.8	****	***	***	***
27-Feb	*****	23.1	19.4	18	****	***	***	***
28-Feb	*****	18.8	18	16.9	****	***	***	***
<b>Mean</b>	*****	19.2	15.2	12.4	****	***	***	***
<b>Maximum</b>	*****	29.1	20.9	18	****	***	***	***
<b>Minimum</b>	*****	9.0	7.1	5.3	****	***	***	***

**Extract of Meteorological Observations for Tai Mei Tuk Automatic Weather Station,  
February 2014**

<b>Date</b>	<b>Total Rainfall (mm)</b>	<b>Prevailing Wind Direction (degrees)</b>	<b>Mean Wind Speed (km/h)</b>
1-Feb	0.0	70	5.3
2-Feb	0.0	260	4.6
3-Feb	0.0	150	4.8
4-Feb	0.0	90	20.5
5-Feb	0.0	90	12.5
6-Feb	0.0	60	8.5
7-Feb	0.0	60	6.3
8-Feb	0.5	50	9.6
9-Feb	6.0	40	16.0
10-Feb	1.0	30	14.3
11-Feb	0.0	40	10.9
12-Feb	1.5	50	8.6
13-Feb	10.0	30	7.9
14-Feb	0.0	20	11.4
15-Feb	0.0	40	10.4
16-Feb	0.0	80	13.5
17-Feb	0.0	60	6.3
18-Feb	0.0	260	9.3
19-Feb	6.5	20	17.7
20-Feb	0.0	110	6.2
21-Feb	0.0	90	18.3
22-Feb	0.0	50	16.2
23-Feb	0.0	70	16.3
24-Feb	0.0	50	12.6
25-Feb	0.0	70	9.5
26-Feb	0.0	60	4.5
27-Feb	0.0	70	14.0
28-Feb	0.0	90	12.5
<b>Mean</b>	-----	50	11.0
<b>Total</b>	25.5	---	-----
<b>Maximum</b>	10.0	---	20.5
<b>Minimum</b>	0.0	---	4.5

\*\*\* unavailable

# missing (less than 24 hourly observations a day)

Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

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**APPENDIX I  
IMPACT DAYTIME CONSTRUCTION NOISE  
MONITORING RESULTS AND THEIR  
GRAPHICAL PRESENTATION**

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## Appendix I Impact Daytime Construction Noise Monitoring Results

### Location : M2 (West Tai Wo - Free Field)

Day time 07:00-19:00 hrs Normal Weekdays Impact Noise Monitoring Results

Date	Measured Noise Level for 30-min, dB(A)				Limit Level, dB(A)	Exceedance (Y/N)
	Start Time	Leq*	L10*	L90*		
5-Feb-14	13:30	69.8	71.5	65.0	75	N
14-Feb-14	14:30	67.9	69.0	64.3	75	N
20-Feb-14	15:50	67.9	69.6	65.5	75	N
26-Feb-14	13:21	67.9	70.1	64.5	75	N
	Min	67.9	69.0	64.3		
	Max	69.8	71.5	65.5		
	Average	68.4	70.1	64.8		

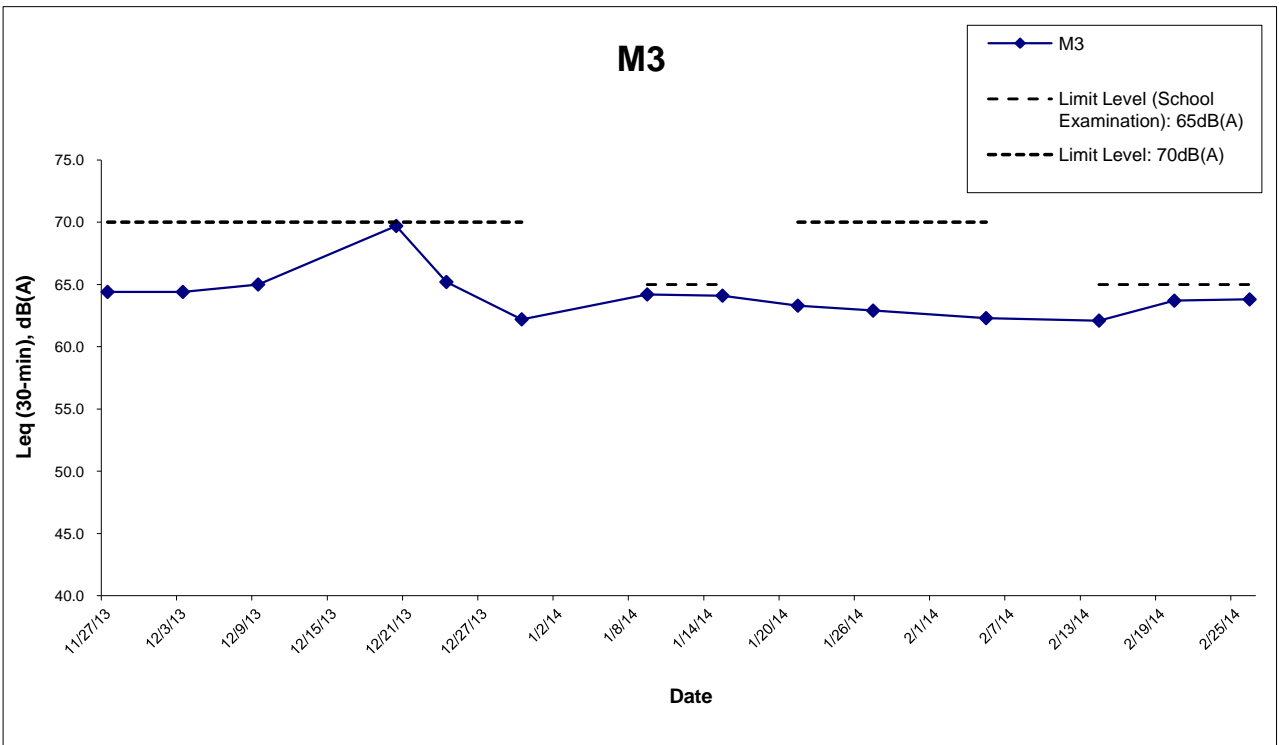
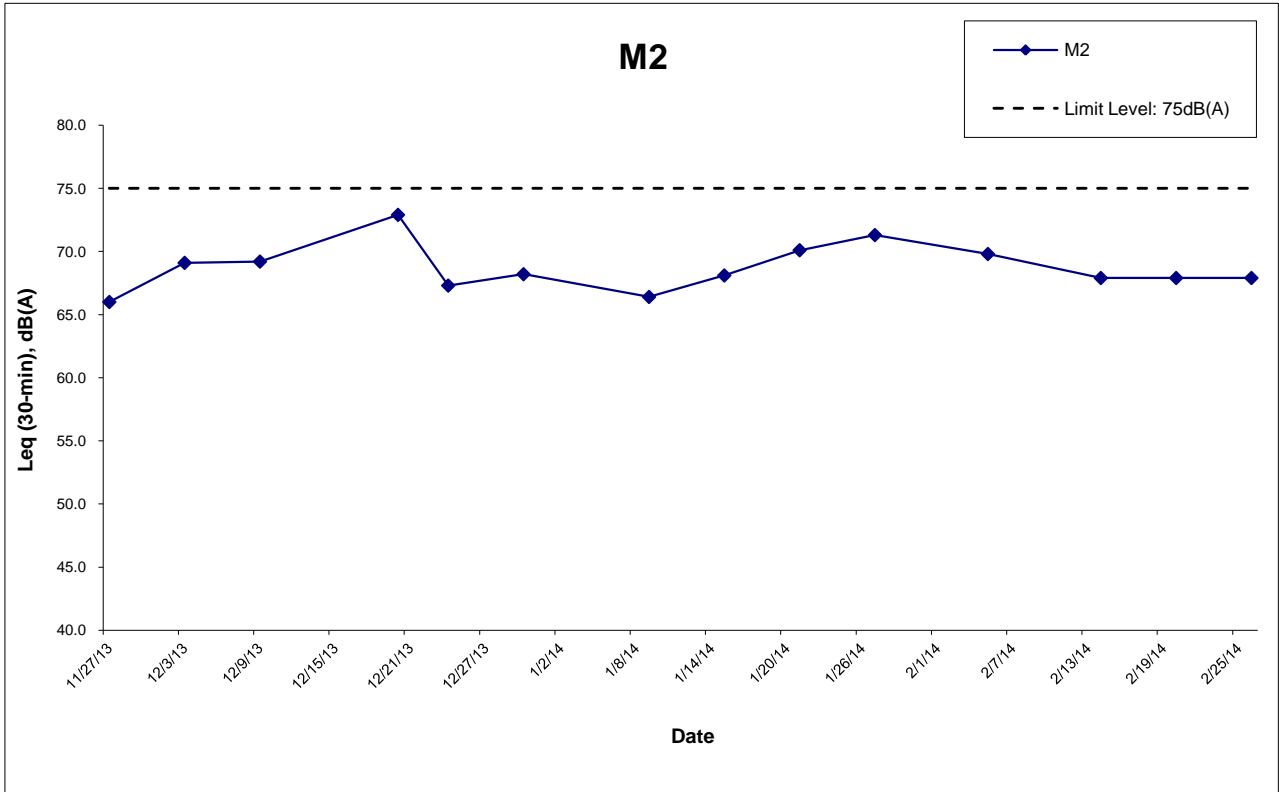
### Location : M3 (Fanling Government Secondary School- Façade)

Day time 07:00-19:00 hrs Normal Weekdays Impact Noise Monitoring Results

Date	Measured Noise Level for 30-min, dB(A)				Limit Level, dB(A)^	Exceedance (Y/N)
	Start Time	Leq	L10	L90		
5-Feb-14	14:30	62.3	64.0	59.5	70	N
14-Feb-14	13:45	62.1	63.6	60.2	65	N
20-Feb-14	15:10	63.7	65.3	60.9	65	N
26-Feb-14	13:02	63.8	65.1	61.1	65	N
	Min	62.1	63.6	59.5		
	Max	63.8	65.3	61.1		
	Average	63.0	64.5	60.4		

\* +3dB(A) Façade effect correction included

^ Limit Level of 70dB(A) applies to education institutes while 65dB(A) applies during school examination period.



Remark:

^ Limit Level of 70dB(A) applies to education institutes while 65dB(A) applies during school examination period.

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CONTRACT NO. HY/2012/06  
 WIDENING OF FANLING HIGHWAY  
 - TAI HANG TO WO HOP SHEK INTERCHANGE



Graphical Presentation of Impact Daytime Construction Noise  
 Monitoring Results

Project No.: 60307376

Date: Mar-14

Appendix I



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**APPENDIX J  
EVENT ACTION PLAN**

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## Appendix J – Event Action Plan

### Event / Action Plan for Air Quality

Event	Action			
	ET Leader	IEC	ER	Contractor
<b>Action Level</b>				
Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Inform IEC and ER;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase monitoring frequency to daily.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rectify any unacceptable practice;</li> <li>2. Amend working methods if appropriate.</li> </ol>
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Inform IEC and ER;</li> <li>3. Repeat measurements to confirm findings;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. Discuss with IEC and Contractor on remedial actions required;</li> <li>6. If exceedance continues, arrange meeting with IEC and ER;</li> <li>7. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise the ER on the effectiveness of the proposed remedial measures;</li> <li>5. Supervise Implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>2. Implement the agreed proposals;</li> <li>3. Amend proposal if appropriate.</li> </ol>

Event / Action Plan for Air Quality

Event Action Level	Action			
	ET Leader	IEC	ER	Contractor
<b>Limit Level</b>				
Exceedance for one sample	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Inform IEC, ER, Contractor and EPD;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. Increase monitoring frequency to daily;</li> <li>5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise ER on the effectiveness of the proposed remedial measures;</li> <li>5. Supervise implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify Contractor;</li> <li>3. Ensure remedial measures properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Amend proposal if appropriate.</li> </ol>
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> <li>1. Notify IEC, ER, Contractor and EPD;</li> <li>2. Identify source;</li> <li>3. Repeat measurement to confirm findings;</li> <li>4. Increase frequency to daily;</li> <li>5. Analyse Contractor's working procedures to determine possible mitigation to be;</li> <li>6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken;</li> <li>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise ER accordingly;</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Ensure remedial measures properly implemented;</li> <li>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Resubmit proposals if problem still not under control;</li> <li>5. Stop the relevant portion of works as determined by ER until the exceedance is abated.</li> </ol>

Event / Action Plan for Noise Impact

Event Limit Level	Action			
	ET Leader	IEC	ER	Contractor
Action Level	<ol style="list-style-type: none"> <li>1. Notify IEC and the Contractor.</li> <li>2. Carry out investigation.</li> <li>3. Report the results of investigation to IEC and the Contractor.</li> <li>4. Discuss with the Contractor and formulate remedial measures.</li> <li>5. Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review with analysed results submitted by ET.</li> <li>2. Review the proposed remedial measures by the Contractor and advise ER accordingly.</li> <li>3. Supervise the implement of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing.</li> <li>2. Notify the Contractor.</li> <li>3. Require the Contractor to propose remedial measures for the analysed noise problem.</li> <li>4. Ensure remedial measures are properly implemented.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposals to IEC.</li> <li>2. Implement noise mitigation proposals.</li> </ol>
Limit Level	<ol style="list-style-type: none"> <li>1. Notify, IEC, ER, EPD and the Contractor.</li> <li>2. Identify the source.</li> <li>3. Repeat measurement to confirm findings.</li> <li>4. Increase monitoring frequency.</li> <li>5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented.</li> <li>6. Inform IEC, ER, and EPD the causes &amp; actions taken for the exceedances.</li> <li>7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and ER informed of the results.</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET Leader and the Contractor on the potential remedial actions.</li> <li>2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise ER accordingly.</li> <li>3. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing.</li> <li>2. Notify the Contractor.</li> <li>3. Require the Contractor to propose remedial measures for the analysed noise problem.</li> <li>4. Ensure remedial measures are properly implemented.</li> <li>5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance.</li> <li>2. Submit proposals for remedial actions to IEC within 3 working days of notification.</li> <li>3. Implement the agreed proposals.</li> <li>4. Resubmit proposals if problem still not under control.</li> <li>5. Stop the relevant activity of works as determined by the ER until the exceedance is abated.</li> </ol>

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**APPENDIX K  
SITE INSPECTION SUMMARIES**

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## Site Inspection Summary

### Inspection Information

Contract No.	HY/2012/06
Date:	4 February 2014
Time:	09:30
Inspection No.:	11

### Non-compliance

Nil
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### Observations

<p><u>Follow-up Observation</u></p> <p>Nil.</p>  <p><u>New Observation</u></p> <p>Nil.</p>
--

### Remarks

Nil
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*Inspection Information*

Contract No.	HY/2012/06
Date:	13 February 2014
Time:	14:15
Inspection No.:	12

*Non-compliance*

Nil
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*Observations*

<p><u>Follow-up Observation</u></p> <p>Nil.</p>  <p><u>New Observation</u></p> <p>Nil.</p>
--

*Remarks*

Nil
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*Inspection Information*

Contract No.	HY/2012/06
Date:	18 February 2014
Time:	14:15
Inspection No.:	13

*Non-compliance*

Nil
-----

*Observations*

<p><u>Follow-up Observation</u></p> <p>Nil.</p>  <p><u>New Observation</u></p> <p>Nil.</p>
--

*Remarks*

Nil
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*Inspection Information*

Contract No.	HY/2012/06
Date:	25 February 2014
Time:	14:00
Inspection No.:	14

*Non-compliance*

Nil
-----

*Observations*

<p><u>Follow-up Observation</u></p> <p>Nil.</p>  <p><u>New Observation</u></p> <p>1. The Contractor was reminded to clear the unused chemicals.</p>
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*Remarks*

Nil
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**APPENDIX L  
STATISTICS ON COMPLAINTS,  
NOTIFICATION OF SUMMONS AND  
SUCCESSFUL PROSECUTIONS**

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## Appendix L

### Statistics on Complaints, Notifications of Summons and Successful Prosecutions

	Date Received	Subject	Status	Total no. followed up by the ET this month	Total no. followed up by the ET since project commencement
<b>Environmental complaints</b>	19 December 2013	EPD referred a complaint from Lot no. 116 of Fui Sha Wai at Tai Hang of Tai Po which is concerned about the construction noise and diesel-like smell generated from construction activities nearby which caused nuisance and health problems on 19 December 2013 morning.	Closed	1	2
	24 February 2014	EPD referred an air-and-odour complaint on 24 February 2014. The complainant complained about the construction site located near the bus stop in Fui Sha Wai, Tai Hang, Tai Wo Service Road West. When construction works were carried out, odour, white smoke and dust were generated. The complainant asked for follow-up actions.	Closed		
<b>Notification of summons</b>	-	-	-	0	0
<b>Successful Prosecutions</b>	-	-	-	0	0

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**APPENDIX M  
COMPLAINT INVESTIGATION REPORT**

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**CONTRACT NO. HY/2012/06**  
**Widening of Fanling Highway**  
**Between Tai Hang and Wo Hop Shek Interchange (Stage 2)**

**ENVIRONMENTAL COMPLAINT ACTION FORM**

Environmental Enquiry No.: EC-02  
(Related Previous Enquiry NO.: -- )

**COMPLAINT DETAILS**

Date Received	24 February 2014
Parameter	* Air and Odour nuisance / Noise/ Water / Waste / Landscape
<b>Enquirer's Details</b>	
Name	Not disclosed
Contact Tel No.	Not disclosed
Address	Not disclosed

**FOLLOW-UP ACTION**

First Contact with the Complaint by	* Telephone / Site Visit / Referral from EPD (ref. N05/RN/00003924-14)
Date of the First Contact	24 February 2014
<p>Details of Complaint:</p> <p>EPD referred an air-and-odour complaint on 24 February 2014. The complainant complained about the construction site located near the bus stop in Fui Sha Wai, Tai Hang, Tai Wo Service Road West. When construction works were carried out, odour, white smoke and dust were generated. The complainant asked for follow-up actions.</p>	
<p>Investigation and Findings :</p> <p>According to the information of the Contractor (China State Construction Engineering (HK) Ltd.), pre-drilling works for ground investigation were carried out at the construction site in Fui Sha Wai at Tai Hang on 24 February 2014. The odour was likely generated from the exhaust of drill rig during operation (Figure 1A).</p> <p>Upon receiving the complaint notification from the EPD on 24 February 2014, the Contractor shut down the diesel water pump at once. Since a similar complaint received on 19 December 2013, the Contractor has subsequently extended the exhaust duct of the drill rig to a higher position to achieve better gas dispersion, intending to reduce the impact to the public (Figure 2). As the exit</p>	

of the exhaust duct is facing the bridge, it cannot be extended too high; otherwise, the bridge users will be affected by the exhaust. In order to further reduce the impacts, a screen was erected to prevent the exhaust of the drill rig from affecting the bridge users. Both the drill rig and diesel water pump were relocated about 30 meters away from the original position on 25 February 2014. Furthermore, the Contractor was reminded to shorten the operation time of the drill rig to minimize the impacts caused to the public.

To the judgment of Mr Michael Tsang, the Environmental Officer of the Contractor, it has been affirmed that the machinery exhaust did not exceed the statutory standards. The notification letter from the EPD justifying his qualification of dark smoke reporter is indicated in Figure 3. However, the Contractor was reminded to maintain and change the filters of the machines regularly to minimize the emission of smoke.

During the construction works, the Contractor has sprayed water in case there was any fugitive dust emission. Thus, it is believed that the ground investigation works did not involve dusty processes. As seen from Figures 2 and 4, no dust emission was observed.

The complaint is considered project-related.

The Contractor is advised to implement the mitigation measures as stated in "Recommended Mitigation Measures".

Exceedance Associated with Site Activity to	* No Exceedance / <del>Action / Limit</del>
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<p>Recommended Mitigation Measures:</p> <ol style="list-style-type: none"> <li>1) Extend the exhaust duct of drill rig to a higher position to achieve better gas dispersion to reduce the impact to the residents;</li> <li>2) Reschedule works to minimize disturbance to the residents;</li> <li>3) Inspect the machines regularly to ensure that they are operating efficiently and that exhaust emissions are not causing nuisance;</li> <li>4) Inform residents nearby in advance of any similar works;</li> <li>5) Confirm the implementation of dust mitigation measures during all construction and dusty activities to minimize fugitive dust generation;</li> <li>6) Maintain the frequency of environmental supervision (by the Contractor) to regularly review the adequacy and effectiveness of dust suppression measures to suit the construction progress;</li> <li>7) Inform the complainant before dusty activities are carried out; and</li> <li>8) Foster better public relations with the sensitive receivers and complainants nearby.</li> </ol>
--

\* Delete where inappropriate

**MONITORING**

Ad hoc Monitoring undertaken	* Yes / No

\* Delete where inappropriate

**Prepared by:** Y W Fung

**Designation:** Environmental Team Leader

**Signature:** 

**Date:** 7-Mar-14

Figure 1A – The concerned drill rig and diesel water pump





Figure 1B – The concerned drill rig and diesel water pump

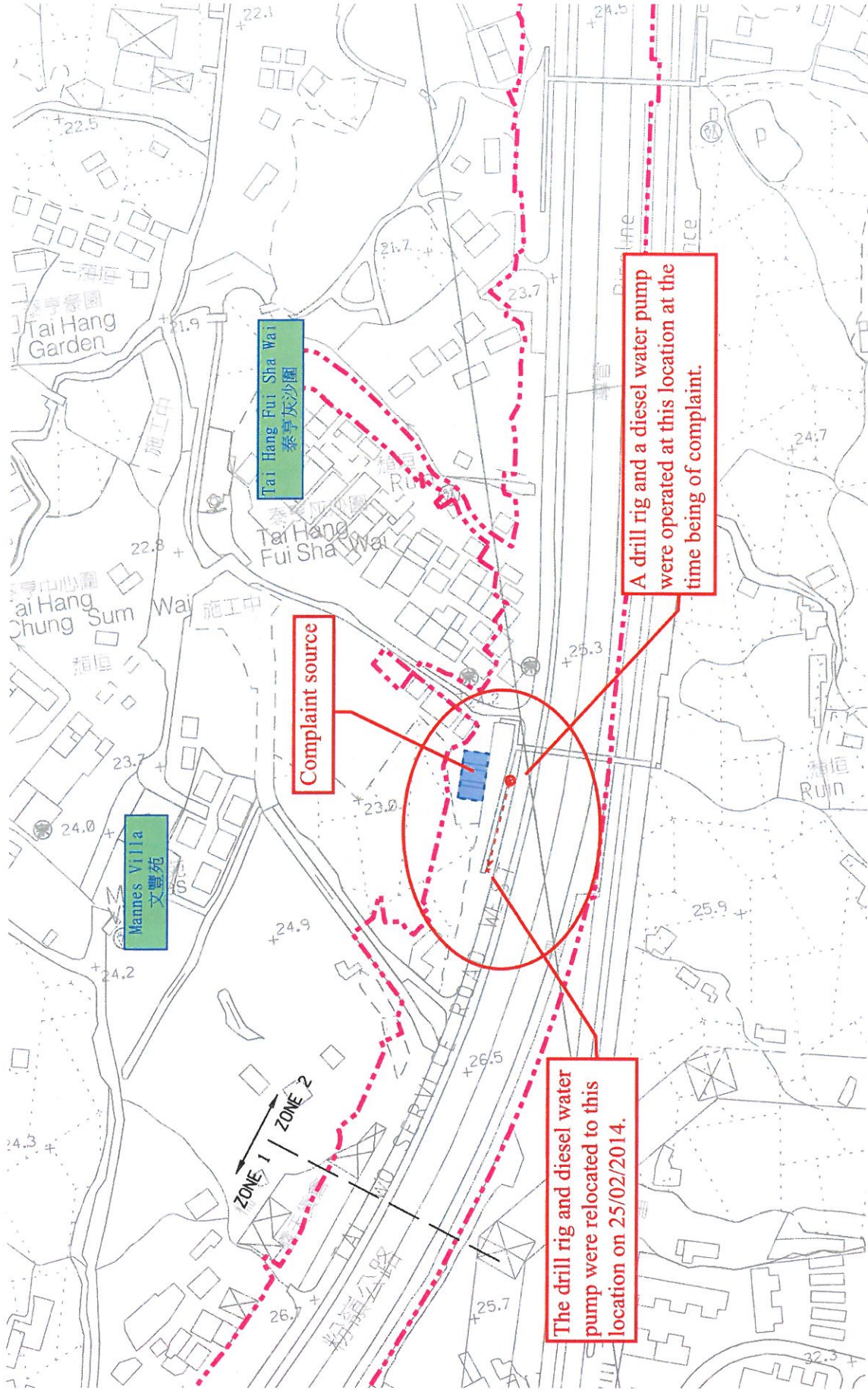


Figure 2 – Extension of the exhaust duct of drill rig

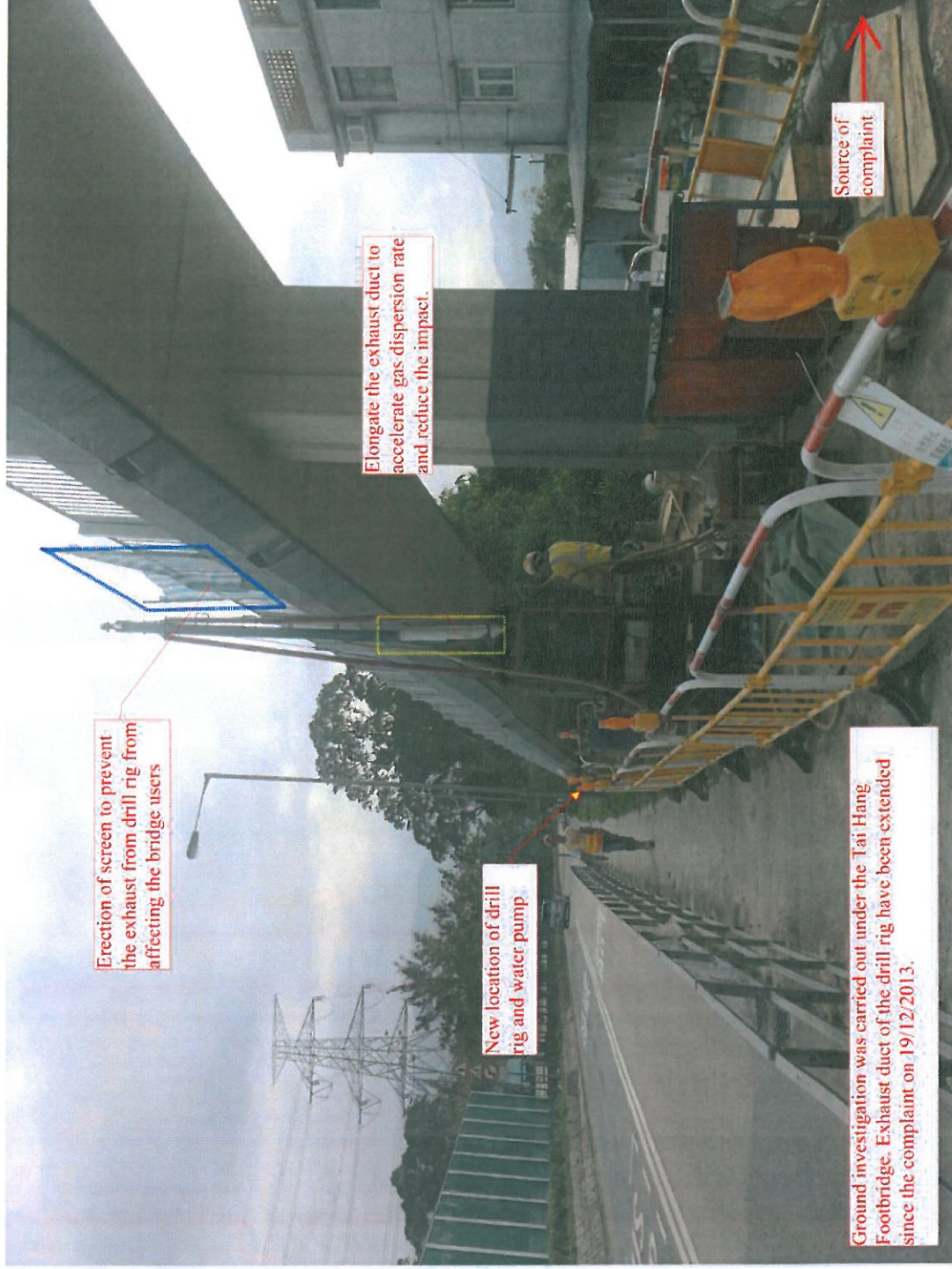


Figure 3 – Notification letter from the EPD justifying Mr Michael Tsang's qualification of dark smoke reporter

本署編號  
OUR REF.:  
來函編號  
YOUR REF.:  
電話  
TEL NO.:  
圖文傳真  
FAX NO.:

(2) EP11/V/1/56 Pt.25 in L/M(2)

**Environmental Protection Department**

Mobile Source Control Section(1)

34/F, Revenue Tower

5 Gloucester Road

Wan Chai, Hong Kong

Homepage (網址) : <http://www.epd.gov.hk>



**環境保護署**

流動污染源管制課(1)

香港灣仔

告士打道5號

稅務大樓34樓

新界馬鞍山  
錦豐苑錦蕙樓 3511 室  
曾川銘先生

曾先生:

**車輛黑煙管制計劃**

多謝你在 2008 年 4 月 26 日參加本署舉辦的檢舉員訓練課程。當日你已完成了全部課程並順利考試合格，並從本信的簽發日期起，成為本計劃下的認可檢舉員。歡迎你加入本計劃，你的檢舉員編號為 **8286**。請在遞交冒煙車輛報告表時確保此編號已註明在報告表上。

現隨信夾附傳真版的冒煙車輛報告表乙份，報告表上已印有你的姓名及檢舉員編號，專供你個人使用。你可將上述冒煙車輛報告表複印使用，如有查詢或索取報告表，請致電 2594 6476 與本署聯絡。

由於我們需根據你提供的資料採取行動，所以，請以慎重的態度來執行檢舉黑煙車輛的工作。在有爭議時，你將會是關鍵證人。正如我們在課堂上所強調的，你應該在肯定車輛持續地冒出過量黑煙的情況下才作出檢舉。謹此再次多謝你出席訓練課程，並期待你能積極參與本計劃。

環境保護署署長  
(黃柏興 代行)



2008 年 5 月 16 日

Figure 4 – No observed dust emission from the diesel water pump

