
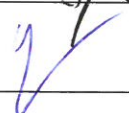


Environmental Protection Department

Contract No. HY/2012/06

**Widening of Fanling Highway
– Tai Hang to Wo Hop Shek
Interchange****Monthly EM&A Report
For November 2015**

[12/2015]

	Name	Signature
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Version:	Rev. 0	Date: 15 December 2015
Disclaimer <p>This report is prepared for Environmental Protection Department and is given for its sole benefit in relation to and pursuant to Contract No. HY/2012/06 and may not be disclosed to, quoted to or relied upon by any person other than Environmental Protection Department without our prior written consent. No person (other than Environmental Protection Department) into whose possession a copy of this report comes may rely on this report without our express written consent and Environmental Protection Department may not rely on it for any purpose other than as described above.</p>		

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15 December 2015
By Fax (2805 5028) & Hand

Attn: Mr. James Penny

Dear Sir,

Environmental Monitoring and Audit (EM&A) for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Stage 2 (between Tai Hang to Wo Hop Shek Interchange) Environmental Permit No. EP-324/2008/D Condition 3.3 – Submission of Monthly EM&A Report –November 2015 for the portion of Stage 2 works under Contract No. HY/2012/06

We refer to the revised Monthly EM&A Report – November 2015 received on 15 December 2015 submitted by the Environmental Team via email. Pursuant to Environmental Permit Condition 3.3, I hereby verify the Monthly EM&A Report – November 2015 (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



Steven Tang
Independent Environmental Checker

c.c. HyD – Mr. Chung Lok Chin (Fax: 2714 5198)
AECOM – Mr. Y W Fung (Fax: 2891 0305)

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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 Project is a designated project and governed by an Environmental Permit (EP-324/2008) issued by the EPD on 23 December 2008. Subsequently, the EPD issued Variation of Environmental Permits of EP-324/2008/A, EP-324/2008/B and EP-324/2008/C on 31 January 2012, 17 March 2014 and 27 March 2015 respectively. The current valid VEP was applied on 19 August 2015 and the VEP (EP-324/2008/D) was subsequently granted on 27 August 2015.

The construction works for this Project are 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/D) 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 30 November 2015. As informed by the Contractor, construction activities in the reporting period were:

- Site clearance
- Ground investigation
- Piling works
- Pipe laying
- Retaining wall construction
- Noise Barrier
- Excavation
- Backfilling
- Drainage
- Temporary bridge construction
- House Construction
- Foot Bridge demolition
- Bridge construction

Reporting Change

There was no reporting change required in the reporting period.

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 period.

Breaches of Action and Limit Levels for Noise

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

Complaint, Notification of Summons and Successful Prosecution

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

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 governed by an Environmental Permit (EP-324/2008) issued by the EPD on 23 December 2008. Subsequently, the EPD issued a Variation of Environmental Permit (EP-324/2008/A) (VEP) on 31 January 2012 and the VEP (EP-324/2008/B) was granted on 17 March 2014. The current valid VEP was applied on 9 March 2015 and the VEP (EP-324/2008/C) was subsequently granted on 27 March 2015.
- 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 twenty-fifth 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 November 2015.

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
ER (Hyder-Arup-Black & Veatch Joint Venture)	Chief Resident Engineer	Edwin Chung	6115 0818	2638 0950
IEC (Mott MacDonald Hong Kong Limited)	Independent Environmental Checker	Steven Tang	2828 5920	2827 1823
Contractor (China State Construction Engineering (Hong Kong) Limited)	Environmental Officer	Michael Tsang	9277 4956	2672 2501
		C C Chow	9679 6315	2672 2501
ET (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
- Piling works
- Pipe laying
- Retaining wall construction
- Noise Barrier
- Excavation
- Backfilling
- Drainage
- Temporary bridge construction
- House Construction

- Foot Bridge demolition
- Bridge construction

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 period 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)
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 and Frequency

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

Table 2.3 Air Quality Monitoring Parameters and Frequency

Parameter	Frequency
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 ± 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 m³/min, and complied with the range specified in the updated EM&A Manual (i.e. 0.6-1.7 m³/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 period

2.6.1 The schedule for environmental monitoring in November 2015 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 ($\mu\text{g}/\text{m}^3$)
AM2 (Fanling Government Secondary School)	73.9	67.6 – 79.6	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 ($\mu\text{g}/\text{m}^3$)
AM2 (Fanling Government Secondary School)	33.4	24.5 – 45.1	200.7	260

- 2.7.2 The major dust source during the monitoring was 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 period.
- 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	B&K 2238
Acoustic Calibrator	Rion NC-74

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 and Frequency

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
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 period

3.6.1 The schedule for environmental monitoring in November 2015 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*	69.3	68.6 – 69.7	75
M3#	62.5	61.1 – 64.4	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 No Action or Limit Level exceedance of construction noise was recorded in the reporting month. No noise complaints related to 0700 – 1900 hours on normal weekdays was received and followed by Environmental Team in the reporting month.
- 3.7.3 Major noise sources during noise monitoring in the reporting period were mainly road traffic noise.
- 3.7.4 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 period, 4 site inspections were carried out respectively on 3, 10, 19 and 24 November 2015 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 The access road was observed to be dry at SA340. The Contractor should dampen the road to reduce dust generation.

4.1.5 Open stockpile was observed uncovered. The Contractor should cover the stockpile with impervious sheeting to prevent dust generation.

4.1.6 Several open site areas were observed to be dry. The Contractor should enhance the water spraying.

Noise

4.1.7 An air compressor was observed with missing noise emission label (NEL) at Tai Hung Footbridge. The Contractor should provide the valid NEL on the air compressor.

Water Quality

4.1.8 Stagnant water was observed in U-channel at SA340. The Contractor should remove the stagnant water.

Chemical and Waste Management

4.1.9 Mud stain and oil stain were observed on ground. The Contractor should remove the stain properly.

4.1.10 Construction waste was observed accumulated. The Contractor should remove the waste frequently.

Landscape and Visual Impact

4.1.11 No adverse observation was identified in the reporting period.

Miscellaneous

4.1.12 No adverse observation was identified in the reporting period.

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, 2,341 m³ of inert C&D material was disposed of as public fill to Tuen Mun 38 (of which 0 m³ was broken concrete), while 150 m³ of general refuse was disposed of at NENT landfill. 53 kg of paper/cardboard packaging, 0 kg of plastics and 0 kg of metals were collected by recycling contractors in the reporting period. 688 m³ of inert C&D materials was reused on site. 1,175 m³ of inert C&D materials was reused in other projects. 478 m³ of inert C&D materials was disposed of as public fill at NENT. 0 kg 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 period 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	2,341 m ³ (of which 0 m ³ was broken concrete)	Tuen Mun 38
General refuse	150 m ³	NENT Landfill
Paper/cardboard packaging	53 kg	Recycling Contractors
Plastics	0 kg	Recycling Contractors
Metals	0 kg	Recycling Contractors
C&D materials reused on site	688 m ³	Site Area
C&D materials reused in other projects	1,175 m ³	Other projects
C&D materials reused in NENT for backfilling	478 m ³	NENT Landfill
Chemical wastes	0 kg	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 2 of the Project and valid in the reporting period 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/D	27/08/2015	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	05/09/2013	N/A	CSHK	Chemical waste produced in Contract HY/2012/06

Statutory Reference	License/ Permit	License or Permit No.	Valid Period		License / Permit Holder	Remarks
			From	To		
WDO	Billing Account for Disposal of Construction Waste	7017860	N/A	N/A	CSHK	Waste disposal in Contract HY/2012/06
NCO	Construction Noise Permit	GW-RN0376-15	27/06/2015	29/11/2015	CSHK	Zone 4 Loading of Precast Beam (Precast Yard)
		GW-RN0408-15	04/07/2015	29/11/2015	CSHK	Zone 2 Installation of Precast Beam (South Bound)
		GW-RN0610-15	27/09/2015	15/11/2015	CSHK	Zone 4 Tree Felling (South Bound)
		GW-RN0643-15	20/10/2015	19/12/2015	CSHK	Zone 4 Assembling of prefabricated bridge segments (North Bound)
		GW-RN0644-15	20/10/2015	19/12/2015	CSHK	Zone 4 Delivery of Prefabricated Bridge Segments (South Bound)
		GW-RN0676-15	24/10/2015	16/01/2016	CSHK	Zone 2 Installation of supporting tower over MTR tracks (South Bound)
		GW-RN0685-15	25/10/2015	20/12/2015	CSHK	Zone 4 Installation of Prefabricated Bridge Segments (South Bound)
		GW-RN0763-15	29/11/2015	31/01/2016	CSHK	Zone 1 Noise Barrier Installation (NB44-46) (South 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 No Action or Limit Level exceedance of construction noise was recorded in the reporting month. No noise complaints related to 0700 – 1900 hours on normal weekdays was received and followed by Environmental Team in the reporting month.

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 No complaint, notification of summons and successful prosecution was received in the reporting period.
- 4.6.3 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 December 2015 will be:-

- Site clearance
- Ground investigation
- Piling works
- Pipe laying
- Retaining wall construction
- Noise Barrier
- Excavation
- Backfilling
- Drainage
- Temporary bridge construction
- House Construction
- Foot Bridge demolition
- Bridge construction

5.2 Key Issues for the Coming Month

5.2.1 Key issues to be considered in December 2015:-

- 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 December 2015 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 All 1-hour and 24-hour TSP monitoring results complied with the Action / Limit Levels in the reporting period.
- 6.1.3 No Action or Limit Level exceedance of construction noise was recorded in the reporting month. No noise complaints related to 0700 – 1900 hours on normal weekdays was received and followed by Environmental Team in the reporting month.
- 6.1.4 4 environmental site inspections were carried out in November 2015. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site audits.
- 6.1.5 No complaint, notification of summons and successful prosecution was received in the reporting period.

6.2 Recommendations

- 6.2.1 According to the environmental site inspections performed in the reporting period, the following recommendations on remedial actions were provided to the Contractor for precautionary purpose:

Air Quality Impact

- The Contractor should dampen the road to reduce dust generation.
- The Contractor should cover the stockpile with impervious sheeting to prevent dust generation.

Noise Impact

- The Contractor should provide the valid NEL on the air compressor.

Water Quality Impact

- The Contractor should remove the stagnant water.

Chemical and Waste Management

- The Contractor should remove the stain properly.
- The Contractor should remove the waste frequently.

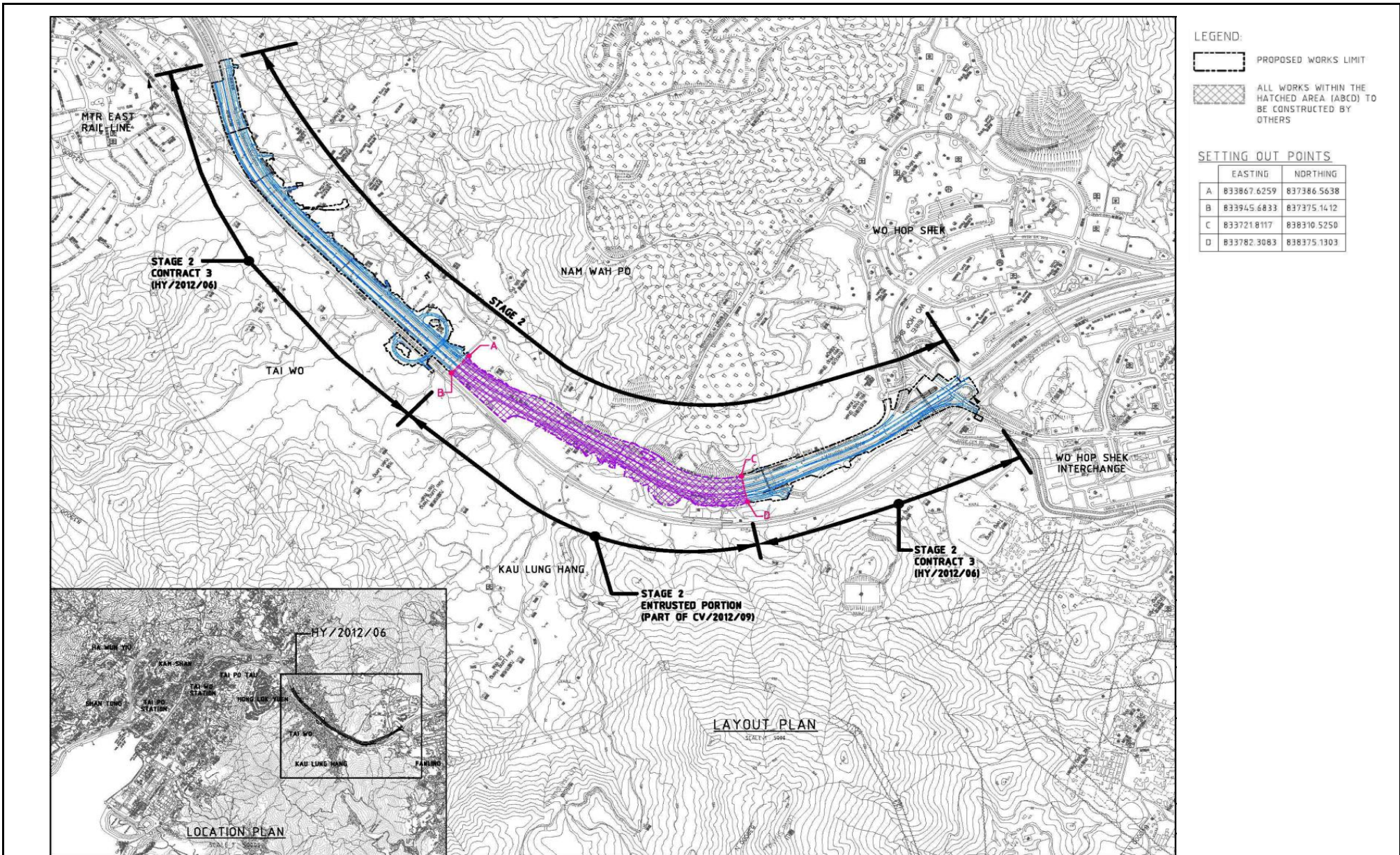
Landscape and Visual Impact

- No adverse observation was identified in the reporting period.

Miscellaneous

- No adverse observation was identified in the reporting period.

FIGURES



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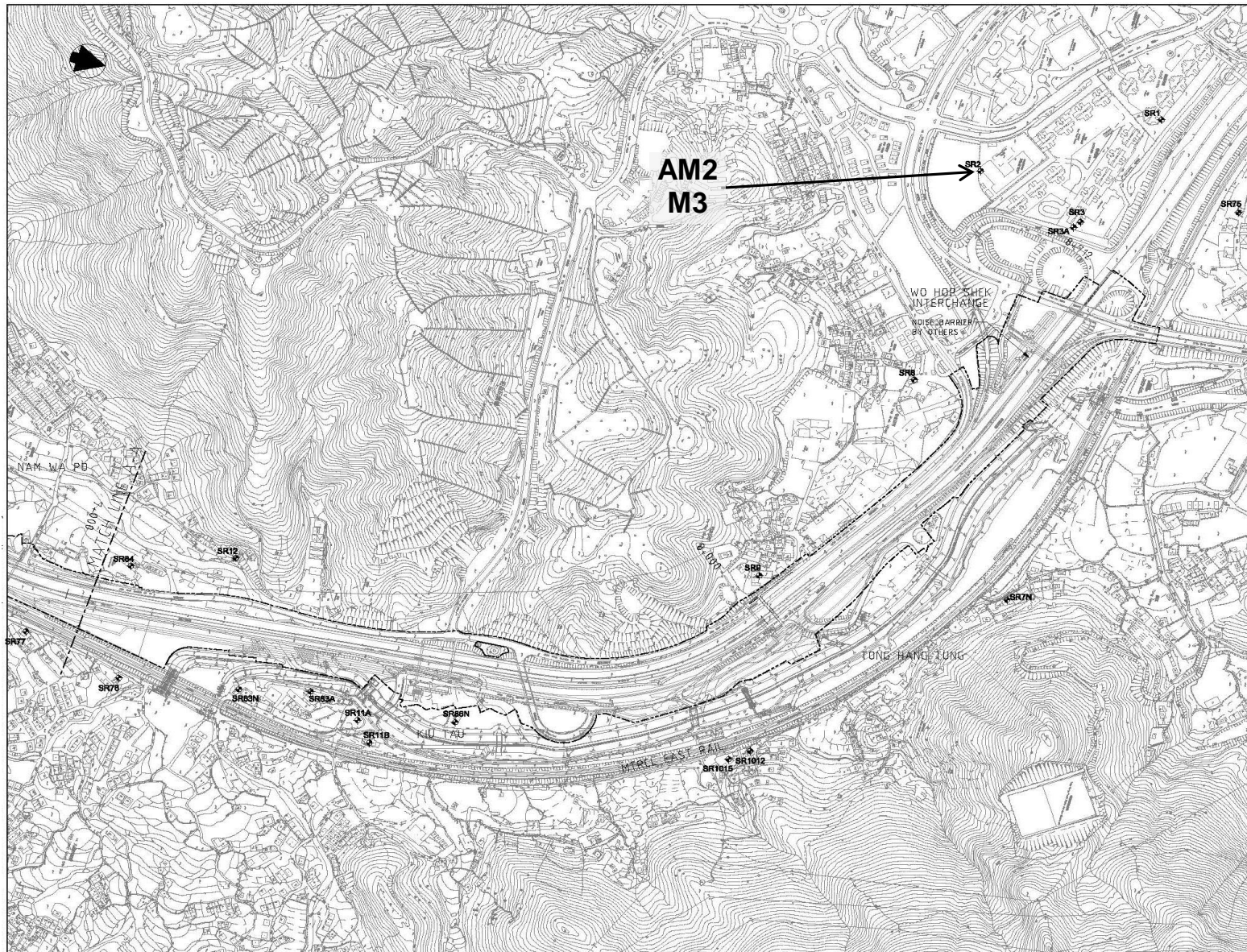
CONTRACT NO. HY/2012/06
 WIDENING OF FANLING HIGHWAY
 - TAI HANG TO WO HOP SHEK INTERCHANGE



Layout Plan

Date: Dec 2013

Figure 1.1



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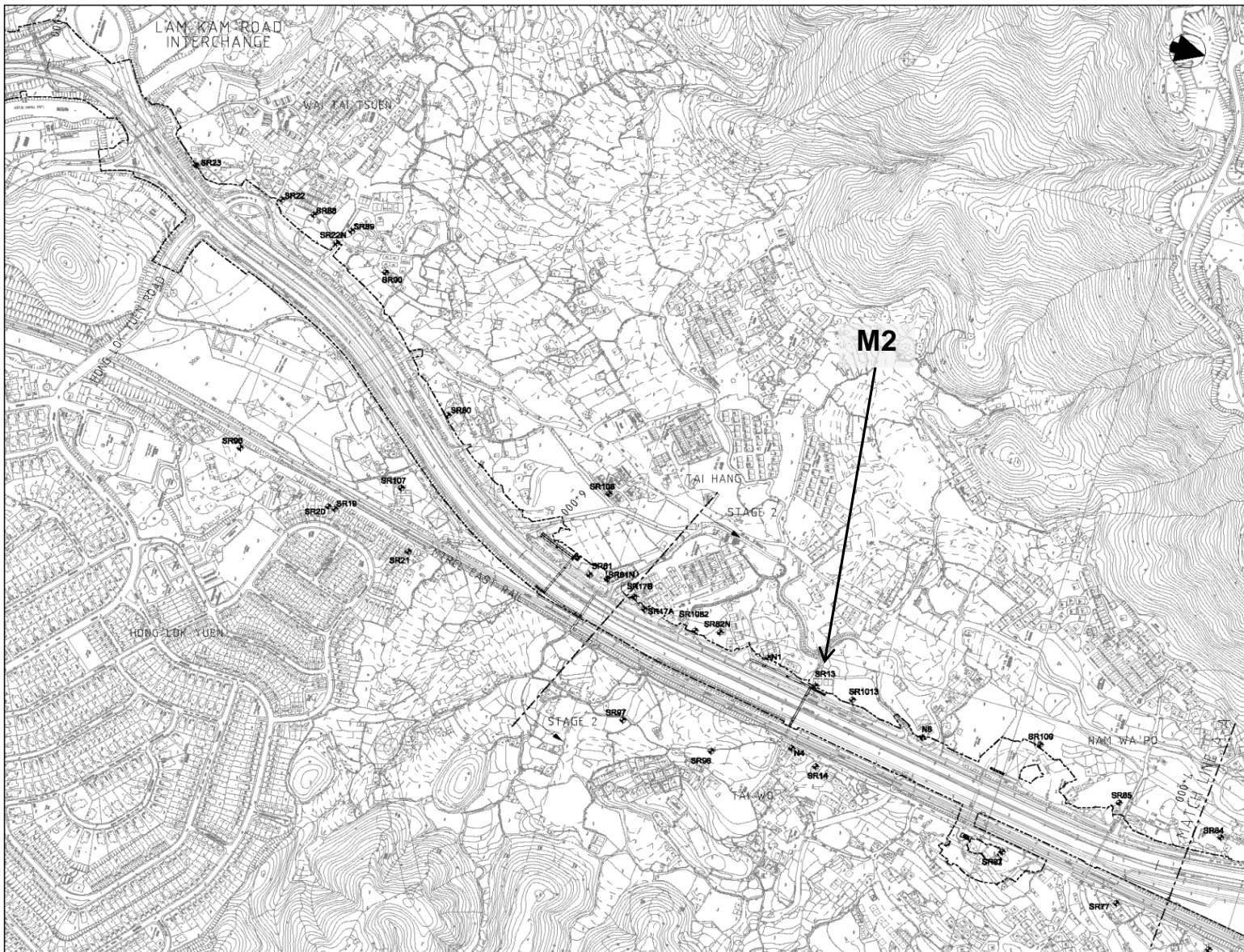
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Locations of Monitoring Station

Date: Dec 2013

Figure 1.2a

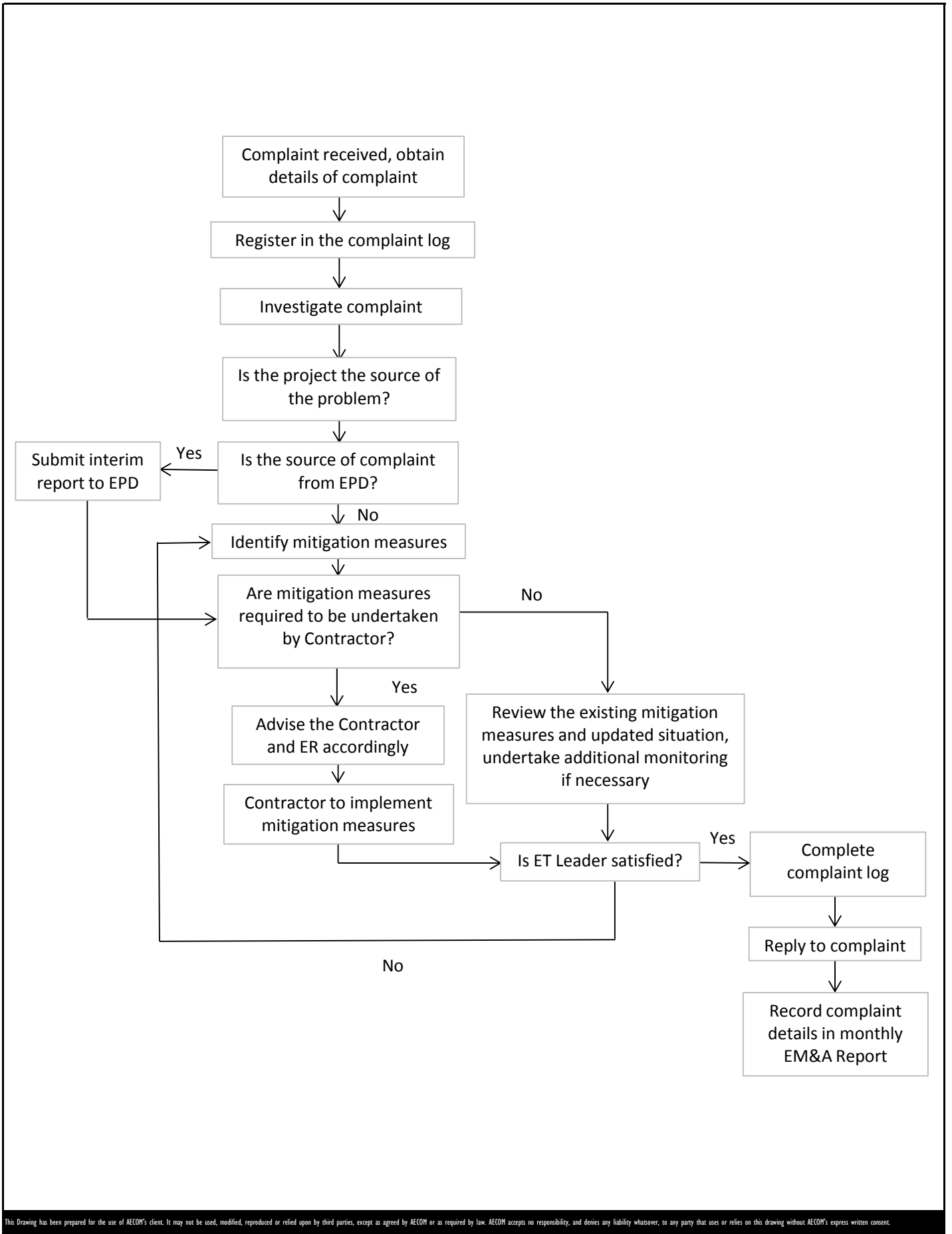


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Locations of Monitoring Station



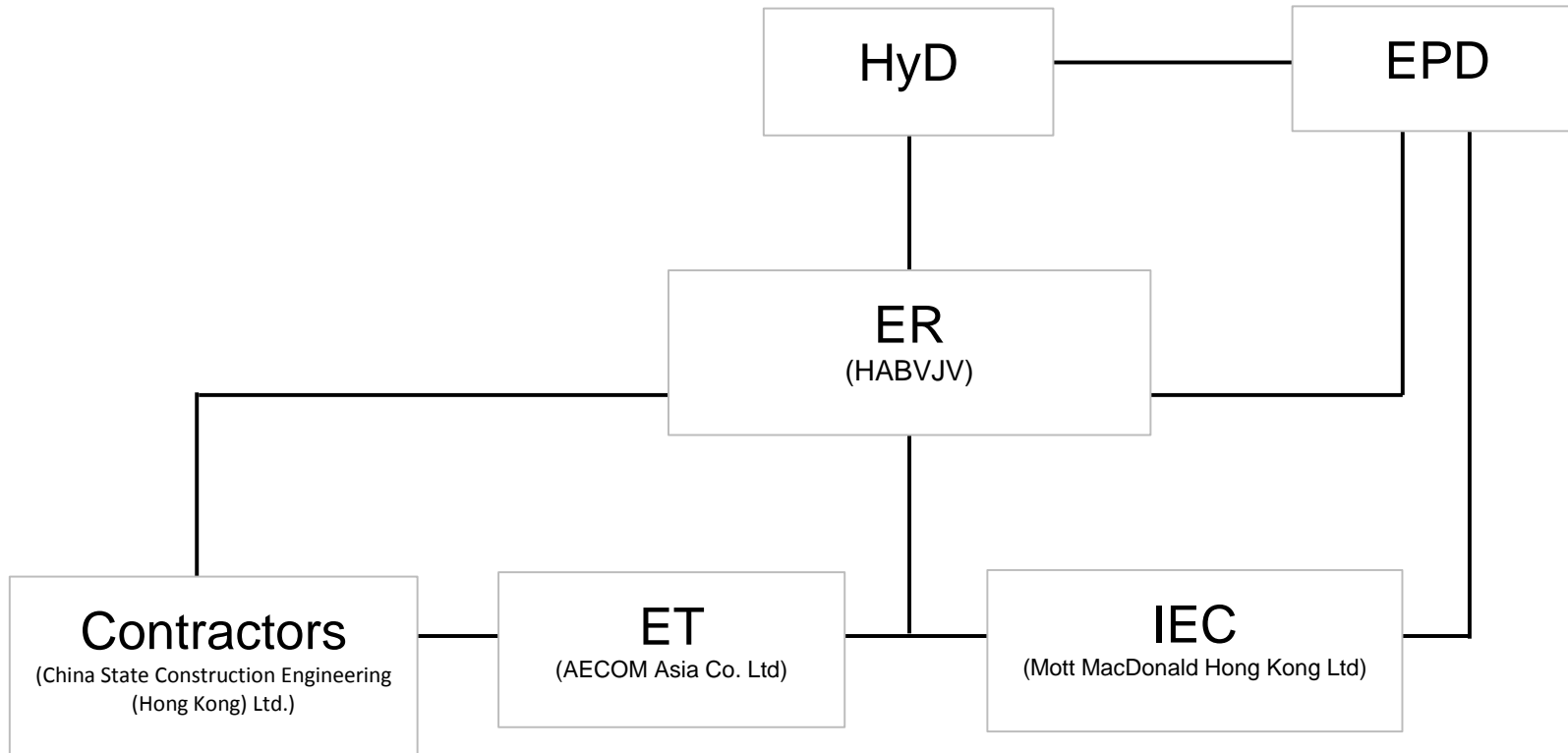
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Environmental Complaint Handling Procedure

**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

**APPENDIX B
CONSTRUCTION PROGRAMMES**

Activity ID	Activity Name	Dur. % Complete	Rem. Duration	Original Duration	Start	Finish	Total Float	2015				2016	
								Nov	Dec	Jan	Feb	Jan	Feb
Contract Condition													
General													
Contract Condition													
Contract Condition													
KD16	KD-16 (883d) - N2: Connection of realigned Tai Wo Service Road East	0%	0	0		20-Nov-15	28						20-Nov-15* ◆ KD-16 (883d) - N2: Connection of realigned Tai Wo Service Road East at interfac
POSSA323A	Site Area SA323A (360d) (not required)	0%	0	0	20-Nov-15		1688						◆ Site Area SA323A (360d) (not required)
POSSA327	Site Area SA327 (180d)	0%	0	0	20-Nov-15*		-323						◆ Site Area SA327 (180d)
POSSA327A	Site Area SA327A (730d)	0%	0	0	20-Nov-15*		-125						◆ Site Area SA327A (730d)
POSSA345	Site Area SA345 (0d)	0%	0	0	30-Nov-15*		0						◆ Site Area SA345 (0d)
ZONE 1 (Ch. 5640 to 5880)													
Noise Barrier Along TWSR-West and Laying New Utilities													
NB42 (Ch.5640-5740)-TWSR West Side													
Noise Barrier Works													
NB00060	Trial pit excavation	50%	6	12	13-Nov-15 A	26-Nov-15	48						
NB00114	NB42 (bay 303) - Footing & Wall Structure - 1 bays - VO	0%	45	45	27-Nov-15	21-Jan-16	48						
NB00115	NB42 (Ch5640-5740) - Backfilling	0%	12	12	17-Feb-16	01-Mar-16	48						
NB00120	NB42 (Ch5640-5740) - NB production	68.89%	14	45	20-Oct-15 A	03-Dec-15	1263						
DSD Southern Trunk Sewer, Water Main Fire Main Works													
TSZ10130	Watermain installation (along NB42)	0%	30	30	20-Nov-15	24-Dec-15	53						
TSZ10140	Firemain installation (along NB42)	0%	30	30	28-Dec-15	01-Feb-16	53						
Underground Utility Works													
UUZ20250	Utility cable laying (Along NB42 bay 303 VO)	0%	14	14	22-Jan-16	06-Feb-16	48						
NB42A (Ch.5750-5810)-TWSR West Side													
Noise Barrier Works													
NB00195	NB42A (Ch5750-5810) - backfilling	0%	12	12	30-Jan-16	22-Feb-16	55						
NB00200	NB42A (Ch5750-5810) - NB production	0%	45	45	20-Nov-15	03-Jan-16	1232						
DSD Southern Trunk Sewer, Water Main Fire Main Works													
TSZ10150	Sheet Piling & Excavation (~5m below ground) (along NB42A)	0%	18	18	20-Nov-15	10-Dec-15	55						
TSZ10180	Watermain installation (along NB42A)	0%	20	20	11-Dec-15	06-Jan-16	55						
TSZ10190	Firemain installation (along NB42A)	0%	20	20	07-Jan-16	29-Jan-16	55						
NB47B (Ch.5820-5880)-TWSR West Side													
Noise Barrier Works													
NB00233	NB47B (bay 311A)- Footing & Wall Structure - VO	6.67%	42	45	17-Nov-15 A	11-Jan-16	57						
NB00235	NB47B (Ch5820-5880)- backfilling	0%	12	12	28-Jan-16	19-Feb-16	57						
NB00240	NB47B (Ch5820-5880) - NB production	68.89%	14	45	20-Oct-15 A	03-Dec-15	1263						
DSD Southern Trunk Sewer, Water Main Fire Main Works													
TSZ10230	Watermain installation (along NB47B)	71.01%	20	69	21-Sep-15 A	12-Dec-15	1340						
TSZ10240	Firemain installation (along NB47B)	23.08%	20	26	13-Nov-15 A	12-Dec-15	93						
Underground Utility Works													
UUZ10121	Utility cable laying by Utility companies (along bay 311A)	0%	14	14	12-Jan-16	27-Jan-16	57						
Noise Barrier Along Fanling Highway S/B													
NB44 (Ch.5700-5760)-FH S/B Side													
Noise Barrier Works													
NB01385	NB44 - Excavation & Footing & Wall Structure (1 bays)	0%	50	50	21-Jan-16	31-Mar-16	892						
NB45 (Ch.5760-5820)-FH S/B Side													
Noise Barrier Works													
NB01435	NB45 - Excavation & Footing & Wall Structure (2 bays)	56.9%	50	116	01-Sep-15 A	20-Jan-16	892						
NB01440	NB45 - NB production	0%	45	45	21-Jan-16	05-Mar-16	1170						
NB46 (Ch.5820-5880)-FH S/B Side													
Noise Barrier Works													
NB01490	NB46 - NB production	0%	45	45	21-Jan-16	05-Mar-16	1170						
ZONE 2 (Ch. 5880 to 6930)													
Noise Barrier Along TWSR-West and Laying New Utilities													
Site Clearance & Demolition of Existing Structure													
Demolition Work													
Z2.P2N.1250	Construction of proposed SHRINE	0%	165	165	20-Nov-15	20-Jun-16	845						
NB47 (Ch.5880-5930)-TWSR West Side													
Noise Barrier Works													
NB00270	NB47 (Ch5880-5930)- Footing & Wall Structure - 5 bays	87.39%	30	238	11-Mar-15 A	24-Dec-15	48						
NB00280	NB47 (Ch5880-5930)- NB production	0%	45	45	25-Dec-15	07-Feb-16	1172						
DSD Southern Trunk Sewer, Water Main Fire Main Works													
TSZ10260	DSD Trunk Sewer laying (along NB47)	79.31%	24	116	17-Aug-15 A	05-Jan-16	48						
TSZ10270	Backfill up to NB47 footing level	0%	6	6	06-Jan-16	12-Jan-16	48						
TSZ10280	Watermain installation (along NB47)	0%	26	26	13-Jan-16	20-Feb-16	48						
NB47A (Ch.5950-5975)-TWSR West Side													
Noise Barrier Works													
NB00330	NB47A - backfilling	94.79%	5	96	07-Sep-15 A	02-Jan-16	90						
NB00335	Backfilling (Along NB47A-above ID1)	93.15%	5	73	06-Oct-15 A	02-Jan-16	90						
NB00340	NB47A - NB production	68.89%	14	45	20-Oct-15 A	03-Dec-15	1238						
NB00350	NB47A - NB post & panel installation	0%	5	5	04-Jan-16	08-Jan-16	970						
DSD Southern Trunk Sewer, Water Main Fire Main Works													
TSZ10560	Watermain & Firemain installation (Along NB47A)	88.89%	9	81	25-Aug-15 A	30-Nov-15	111						
Underground Utility Works													

	Project ID: DWP Rev 02 (1511)	Contract No. HY/2012/06		Date	Revision	C.	Appro...
	Layout: 3 Month Rolling Program	Widening of Fanling Highway - Tai Hang to Wo Hop Shek Interchange		13-Ma...	WP Rev 1		
	Page 1 of 6	3 Month Rolling Program(20-Nov-15)		30-Jun...	WP Rev...		

Activity ID	Activity Name	Dur. % Complete	Rem. Duration	Original Duration	Start	Finish	Total Float	2015				2016	
								Nov		Dec		Jan	Feb
UUZ20110	Utility cable laying by Utility companies (Alona NB47A)	0%	30	30	20-Nov-15	24-Dec-15	90						
UUZ20240	Utility cable laying by Utility companies (Alona NB47A-above)	0%	30	30	20-Nov-15	24-Dec-15	90						
NB48 (Ch.5995-6120)-TWSR West Side													
Noise Barrier Works													
NB00400	NB48 (Ch5995-6060) - NB production	0%	45	45	20-Nov-15	03-Jan-16	1207						
NB00460	NB48 (Ch6060-6120) - NB production	0%	45	45	20-Nov-15	03-Jan-16	1207						
DSD Southern Trunk Sewer, Water Main Fire Main Works													
TSZ10420	Backfill up to NB48, 0-60m footing level	63.89%	13	36	24-Oct-15 A	04-Dec-15	40						
TSZ10430	Watermain installation (along NB48, 0-60m)	0%	30	30	05-Dec-15	12-Jan-16	40						
TSZ10440	Firemain installation (along NB48, 0-60m)	0%	30	30	13-Jan-16	25-Feb-16	40						
TSZ10460	DSD Trunk Sewer laying (along NB48, 60-110m)	48.57%	18	35	31-Oct-15 A	10-Dec-15	37						
TSZ10470	Backfill up to NB48, 60-110m footing level	0%	6	6	11-Dec-15	17-Dec-15	37						
TSZ10480	Watermain installation (along NB48, 60-110m)	0%	26	26	18-Dec-15	20-Jan-16	37						
TSZ10490	Firemain installation (along NB48, 60-110m)	0%	26	26	21-Jan-16	29-Feb-16	37						
Underground Utility Works													
UUZ20120	Utility cable laying by Utility companies (Alona NB48, 0-60m)	0%	24	24	20-Nov-15	17-Dec-15	89						
UUZ20130	Utility cable laying by Utility companies (Alona NB48, 60-110m)	0%	20	20	20-Nov-15	12-Dec-15	93						
NB49 (Ch.6145-6215)-TWSR West Side													
Noise Barrier Works													
NB00493	Procurement coupler	41.67%	14	24	09-Nov-15 A	05-Dec-15	39						
NB00509	NB49 - Footing & Wall Structure - bays 5	81.48%	15	81	21-Sep-15 A	29-Dec-15	39						
NB00510	NB49 - Footing & Wall Structure - 4 bays	25.81%	23	31	11-Nov-15 A	16-Dec-15	48						
NB00530	NB49 - NB production	0%	45	45	17-Dec-15	30-Jan-16	1180						
DSD Southern Trunk Sewer, Water Main Fire Main Works													
TSZ10500	Sheet Piling & Excavation (~7m below ground) (along NB49)	0%	14	14	30-Dec-15	15-Jan-16	39						
TSZ10510	DSD Trunk Sewer laying (along NB49)	0%	12	12	16-Jan-16	29-Jan-16	39						
TSZ10520	Backfill up to NB49 footing level	0%	6	6	30-Jan-16	05-Feb-16	39						
TSZ10530	Watermain installation (along NB49)	0%	20	20	06-Feb-16	09-Mar-16	39						
Underground Utility Works													
UUZ20140	Utility cable laying by Utility companies (Alona NB49, 0-70m)	0%	30	30	17-Dec-15	23-Jan-16	72						
NB49B (Ch.6215-6235)-TWSR West Side													
Noise Barrier Works													
NB00538	Pending for U-channel Design & VO	85.71%	7	49	30-Sep-15 A	27-Nov-15	9						
NB00542	Pending for Permanent Road Works Design & VO	85.71%	7	49	30-Sep-15 A	27-Nov-15	9						
NB00544	Construction of U-channel & permanent road for Hse 161 new	0%	0	0	28-Nov-15	28-Nov-15	9						
NB00547	Hoarding erection to change Hse 161 access	0%	6	6	28-Nov-15	04-Dec-15	9						
NB00549	NB49B - Pre-drilling	0%	6	6	05-Dec-15	11-Dec-15	9						
NB00550	NB49B piling (0.19m -20no)	0%	21	21	12-Dec-15	08-Jan-16	9						
NB00560	NB49B- Sheet piling & Excavation	0%	12	12	03-Feb-16	25-Feb-16	9						
DSD Southern Trunk Sewer, Water Main Fire Main Works													
TSZ10550	Sheet Piling & Excavation (~5m below ground) (along NB49B)	0%	21	21	09-Jan-16	02-Feb-16	9						
TSZ10570	DSD Trunk Sewer laying (along NB49B - ID2-1)	0%	34	34	03-Feb-16	22-Mar-16	43						
NB54 (Ch.6240-6280)-TWSR West Side													
Noise Barrier Works													
NB00690	NB54 - Footing & Wall Structure - 2 bays	63.44%	34	93	09-Sep-15 A	31-Dec-15	59						
NB00710	NB54 - NB production	0%	45	45	01-Jan-16	14-Feb-16	1165						
DSD Southern Trunk Sewer, Water Main Fire Main Works													
TSZ10610	DSD Trunk Sewer laying (along NB54 except ID2-1 section)	16%	21	25	16-Nov-15 A	14-Dec-15	26						
TSZ10620	Backfill up to NB54 footing level	0%	6	6	15-Dec-15	21-Dec-15	26						
TSZ10630	Watermain installation (along NB54)	0%	30	30	22-Dec-15	28-Jan-16	26						
TSZ10640	Firemain installation (along NB54)	0%	30	30	29-Jan-16	12-Mar-16	26						
Underground Utility Works													
UUZ20160	Utility cable laying by Utility companies (Alona NB54, 0-40m)	0%	20	20	02-Jan-16	25-Jan-16	59						
NB54A (Ch.6290-6350)-TWSR West Side													
Noise Barrier Works													
NB00760	NB54A - Footing & Wall Structure - 6 bays	69.7%	40	132	01-Aug-15 A	08-Jan-16	49						
NB00780	NB54A - NB production	0%	45	45	09-Jan-16	22-Feb-16	1157						
DSD Southern Trunk Sewer, Water Main Fire Main Works													
TSZ10650	Sheet Piling & Excavation (~5m below ground) (along NB54A)	95.61%	5	114	13-Jul-15 A	25-Nov-15	24						
TSZ10660	DSD Trunk Sewer laying (along NB54A)	0%	18	18	26-Nov-15	16-Dec-15	24						
TSZ10670	Backfill up to NB54A footing level	0%	6	6	17-Dec-15	23-Dec-15	24						
TSZ10680	Watermain installation (along NB54A)	0%	30	30	24-Dec-15	30-Jan-16	24						
TSZ10690	Firemain installation (along NB54A)	0%	30	30	01-Feb-16	15-Mar-16	24						
Underground Utility Works													
UUZ20170	Utility cable laying by Utility companies (Alona NB54A, 0-60m)	0%	24	24	09-Jan-16	05-Feb-16	49						
NB57 (Ch.6365-6445)-TWSR West Side													
Noise Barrier Works													
NB00830	NB57 - Footing & Wall Structure - 7 bays	81.93%	60	332	15-Dec-14 A	01-Feb-16	83						
NB00840	NB57 - backfilling	0%	12	12	02-Feb-16	24-Feb-16	83						
NB00850	NB57 - NB production	0%	45	45	02-Feb-16	17-Mar-16	1133						
DSD Southern Trunk Sewer, Water Main Fire Main Works													
TSZ10710	DSD Trunk Sewer laying (along NB57)	0%	45	45	11-Jan-16	11-Mar-16	6						
TSZ10775	Wash-out chamber water pipe diversion at the site access for NB57	0%	52	52	16-Dec-15	26-Feb-16	6						
TSZ10785	PCCW drawpit by Pccw	72.15%	22	79	11-Sep-15 A	15-Dec-15	6						
NB58 (Ch.6445-6480)-TWSR West Side													
Noise Barrier Works													
NB00900	NB58 - Footing & Wall Structure - 3 bays	56.25%	42	96	15-Sep-15 A	11-Jan-16	51						

Activity ID	Activity Name	Dur. % Complete	Rem. Duration	Original Duration	Start	Finish	Total Float	2015				2016		
								Nov		Dec		Jan		Feb
								Start	End	Start	End	Start	End	Start
HKY1290	HKYP7 - Pre-bored H pile (6 nos)	0%	18	16	23-Nov-15 A	10-Dec-15	-39							
HKY1310	HKYP7 - Pile cap, Pier and Pier Head	0%	30	30	06-Feb-16	21-Mar-16	-39							
Crossing Fanling Highway Section														
HKY1420	HKYP2 - Predrilling (1nos)	0%	3	3	21-Dec-15	23-Dec-15	74							
HKY1430	HKYP2 - Pre-bored H pile (8 nos)	0%	24	24	05-Jan-16	01-Feb-16	67							
HKY1440	HKYP2 - Pile Test	0%	28	28	02-Feb-16	29-Feb-16	93							
HKY1450	HKYP2 - Pile cap, Pier and Pier Head	0%	36	36	02-Feb-16	23-Mar-16	67							
TWSR-East FL Highway S/B Side Section														
HKY1590	Erect Staircase (HKYFB-TWSR-E side)	0%	30	30	02-Jan-16	05-Feb-16	18							
HKY1600	Finishes Work	0%	30	30	06-Feb-16	21-Mar-16	93							
HKY1760	HKYP4 - Pile cap, Pier and Pier Head	97.3%	9	333	15-Oct-14 A	30-Nov-15	73							
HKY1860	Erect Steel Ramp (HKYFB-TWSR-E side)	0%	75	75	06-Feb-16	19-May-16	18							
ZONE 4 (Ch. 7925 to 8700)														
Bridge Construction														
New Wo Hop Shek Pedstrian & Cycle Bridge														
General														
WHS1050	Steel Ramp prefabrication (WHSB)	73.74%	26	99	24-Aug-15 A	19-Dec-15	40							
WHS1060	Steel Ramp available on site (WHSB)	0%	0	0	21-Dec-15		40							
WHS1070	Steel Staircase prefabrication (WHSB)	73.74%	26	99	24-Aug-15 A	19-Dec-15	986							
WHS1080	Steel Staircase available on site (WHSB)	0%	0	0	21-Dec-15		986							
TWSR-West/ FL Highway N/B Side Section														
WHS1180	WHSP2 - Pile cap, Pier and Pier Head	69.91%	34	113	17-Aug-15 A	31-Dec-15	2							
WHS1220	WHSP6 - Pile cap, Pier and Pier Head	0%	45	45	12-Dec-15	05-Feb-16	2							
WHS1228	WHSP7 - Pile cap, Pier and Pier Head	0%	45	45	06-Feb-16	12-Apr-16	846							
WHS1898	WHSP3 - Pile cap, Pier and Pier Head	77.63%	34	152	02-Jul-15 A	31-Dec-15	2							
WHS1930	WHSP4 - Pile cap, Pier and Pier Head	77.63%	34	152	02-Jul-15 A	31-Dec-15	2							
WHS1970	WHSP5 - Pile cap, Pier and Pier Head	0%	30	30	02-Jan-16	05-Feb-16	2							
WHS1980	1st half Steel Ramp ready for erection (WHS-TWSR-W side)	0%	0	0		05-Feb-16	2							
WHS1990	Erect 1st half ramp	0%	60	60	06-Feb-16	29-Apr-16	2							
Crossing Fanling Highway Section														
WHS1480	Erect WHS bridge Structure across fanling highway	0%	90	90	02-Jan-16	29-Apr-16	17							
Slip Road Y Construction														
Drainage & Road Works														
TWSR-East FL Highway S/B Side Section														
RDZ41000	Construct Slip Rd Y (Ch8250-8370)(SA340) (Z4)	96%	9	225	02-Mar-15 A	30-Nov-15	27							
RDZ41010	Construct Slip Rd Y (Ch8100-8250)(SA342) (Z4)	92.37%	9	118	13-Jul-15 A	30-Nov-15	27							
RDZ41020	Construct Slip Rd Y @ existing TWSR-E junction	0%	70	70	01-Dec-15	03-Mar-16	27							
RDZ41082	Construct Slip Rd Y (Ch7925-8050)(SA3460) - 1 lane @	43.7%	67	119	17-Sep-15 A	18-Feb-16	1							
RDZ41084	Construct Slip Rd Y (Ch7925-8050)(SA3460) - 1 temp	0%	120	120	19-Feb-16	16-Jul-16	1							
Underground Utility Works														
DN600 and DN900 Watermain														
DN1054	Watermain (DN900/1200) changeover for DN600 Works	42.62%	35	61	20-Oct-15 A	02-Jan-16	0							
DN1056	Laying DN600 section after DN900 changeover Works	0%	65	65	04-Jan-16	31-Mar-16	0							
VO - Wall 76A Construction														
Retaining Wall W76A														
TWSR-East FL Highway S/B Side Section														
W76A1050	Drainage work for Caltex access road	0%	150	150	20-Nov-15	01-Jun-16	742							
Fanling Highway Construction														
Drainage & Road Works														
TWSR-East FL Highway S/B Side Section														
RDZ41005	Construct FH S/B Lane 1,2 (Ch8250-8370)(SA340) (Z4)	90%	24	240	02-Mar-15 A	17-Dec-15	22							
RDZ41015	Construct FH S/B Lane 1,2 (Ch8100-8250)(SA342) (Z4)	86.89%	24	183	12-May-15 A	17-Dec-15	22							
RDZ41025	Construct FH S/B Lane 1,2 @ existing TWSR-E junction	0%	60	60	18-Dec-15	09-Mar-16	22							
RDZ41040	Construct FH S/B Lane 1,2 (Ch8000-8050)(SA340)(Z4)	56.25%	21	48	19-Oct-15 A	14-Dec-15	25							
RDZ41042	TTA for HKY P2 works	0%	5	5	15-Dec-15	19-Dec-15	74							
Other Works														
Retaining Wall W77A														
TWSR-East FL Highway S/B Side Section														
RWZ4.1070	Backfilling (0-3m) - RW77A (Ch.50-130)	69.01%	22	71	21-Sep-15 A	15-Dec-15	300							
Retaining Wall W77B														
TWSR-East FL Highway S/B Side Section														
RWZ4.1100	Base slab & Wall (0-3m high)- RW77B (Ch 0-40)	0%	60	60	20-Nov-15	01-Feb-16	217							
RWZ4.1110	Backfilling (0-3m) - RW77B (Ch 0-40)	0%	30	30	02-Feb-16	16-Mar-16	247							
TCSS Works														
TCSS Pre-Construction Works														
TCSS0100	Acquire Design Criteria from Drawing & procurement	85.16%	38	256	27-Feb-15 A	06-Jan-16	328							
TCSS0110	Confirm Design criteria with Engineer	0%	30	30	07-Jan-16	05-Feb-16	417							
TCSS0120	Prepare Shop Drawing-TCSS	0%	45	45	06-Feb-16	12-Apr-16	328							

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

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

Air Quality – Schedule of Recommended Mitigation Measures

Impact	Mitigation Measures	Timing	Implementation Status
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 ³ shall be enclosed, covered or dampened during dry or windy conditions.		@
	Effective water sprays shall be used to control potential dust emission sources such as unpaved haul roads and active construction areas.		@
	All spraying of materials and surfaces shall avoid excessive water usage.		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	V
	Reduce the number of equipment and their percentage on-time.		V
	3.5 m and 5.5 m high temporary noise barrier at culvert construction work area (Figure 2a of the Environmental Permit).		V
	3 m high temporary noise barrier along the northern edge of Bridge 12 at ground level (Figure 2b of the Environmental Permit).		V
	2 m high temporary noise barrier along the northern edge of Bridge 12 at bridge level (Figure 2b of the Environmental Permit).		V
	2.5 m high temporary noise barrier along Tai Wo Service Road West (Figure 2c of the Environmental Permit).		V
	3.5m and 7m high temporary noise barrier along Tai Wo Services Road West near Tai Hang (Figure 2c of the Environmental Permit).		V
	7 m high temporary noise barrier along Tai Wo Service Road West near Tai Wo Footbridge work area (Figure 2d of the Environmental Permit).		V
	7 m high temporary noise barrier near Kiu Tau Footbridge work area (Figure 2d of the Environmental Permit).		V
	2.5 m high temporary noise barrier near river diversion work area (Figure 2e of the Environmental Permit).		N.A.

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"> - Prevent off-site migration through use of sheet piles. - Minimise duration of works as far as practical. - All sewer and drainage connections should be sealed to prevent debris, soil, sand, etc, from entering public sewers/drains. - Site surface runoff should be settled to remove sand/silt before it is discharged into the existing storm drains. 	During construction	V
	Road Widening Works, Earthworks and Culvert Extension Works <ul style="list-style-type: none"> - 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. - Sand traps, oil interceptors and other pollution prevention installations should be provided, properly cleaned and maintained. - Runoff from exposed working areas, unfinished slopes and from unlined temporary channels should be directed to stilling basins and/or silt traps before discharging to the drainage outfalls. - Regular inspections of stilling basins and/or silt traps are required to ensure that sediment is not conveyed into the existing drainage system. - Open stockpiles should be covered with a tarpaulin cover. - During the wet season, any exposed top soils should be covered with a tarpaulin, shotcreted or hydroseeded. - Sand and silt from wash-water from vehicle washing should be settled out before discharging into storm drains. - Fuels should be stored in bunded areas such that spillage can be easily collected. 		@

Waste – Schedule of Recommended Mitigation Measures

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

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

Ecology – Schedule of Recommended Mitigation Measures

Impact	Mitigation Measures	Timing	Implementation Status
Ecology during construction	Accurate Delineation of Works Area - Boundaries of proposed works areas shall be clearly identified and separated from external areas by a physical barrier to prevent encroachment of adjacent habitats. - Individual trees which fall within the works areas but which work plans do not require removal are to be retained and fenced off to maximize protection.	During construction	V
	Vegetation Clearance - No fires shall be lit within the works area for the purpose of burning cleared vegetation. - The Contractor shall give consideration to mulching the cleared vegetation for recycling within the works area / adjacent land.		V
	Dust generation There are a number of measures which shall be taken as specified in the Air Pollution Control (Construction Dust) Regulation on 'Dust Control Requirements, including the following key measures to be applied during construction: - Vehicle washing facilities to be provided at every discernible or designated vehicle exit point; - All temporary site access roads shall be sprayed with water to suppress dust as necessary; - All dusty materials should be sprayed with water immediately prior to any handling; and - All debris should be covered entirely by impervious sheeting or stored in a sheltered debris collection area.		V
	Surface Run-off In general, mitigation measures shall be in accordance with ProPECC PN1/94 on 'Construction Site Drainage'. Key measures include: - Bund and cover stock piles to avoid run-off; - Channel any run-off through a system of oil, grease and sediment / silt traps and reuse water on site where ever practical; - All vehicle maintenance to be undertaken within a bunded area; and - Maximise vegetation retention on-site to maximise absorption (minimise transport).		V

Landscape and Visual Impact – Schedule of Recommended Mitigation Measures

Impact	Mitigation Measures	Timing	Responsibility
Landscape & Visual during construction	Preservation of Existing Vegetation - 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
	Temporary Works Areas - Where feasible the works areas would be screened using hoarding and existing vegetation would be retained where possible to reduce the landscape and visual impacts arising from the construction activity. The landscape of these works areas would be restored following the completion of the construction phase.		V
	Hoarding - A hoarding would be erected where practicable in the most visually sensitive locations to screen the temporary construction works from the local VSRs.		V
	Top Soils - The works will result in disturbance to extensive areas of topsoil. Topsoil worthy of retention should be stockpiled for use following completion of the civil engineering works. It should either be temporarily vegetated with hydroseeded grass or turned over on a regular basis.		#
	Protection of Important Landscape Features - Important features such as temples, Island House and kilns within the study area, although remote from the proposed works retained and adequately protected.		#

Legend:

V = implemented;

x = not implemented;

@ = partially implemented;

+ = recommended and immediately implemented during the site inspection by the Contractor;

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

= to be implemented.

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

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 ³	500 µg/m ³

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

Location	Action Level	Limit Level
AM2	200.7 µg/m ³	260 µg/m ³

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

**APPENDIX E
CALIBRATION CERTIFICATES OF
MONITORING EQUIPMENTS**

Total Suspended Particulates (TSP) Sampler
Field Calibration Report

Station Fanling Government Secondary School (AM2)
Date: 26-Nov-15
Model No: TE-5170
Equipment No.: A-001-74T

Operator: Shum Kam Yuen
Next Due Date: 26-Jan-16
Verified Against: O.T.S -- 988
Expiration Date: 28-May-2015

Ambient Condition					
Temperature, Ta	293.0	Kelvin	Pressure, Pa	764.2	mmHg

Orifice Transfer Standard Information					
Equipment No.:	843	Slope, mc	1.99924	Intercept, bc	-0.01238
Last Calibration Date:	9-Dec-14	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	9-Dec-15				

Calibration of TSP Sampler					
Calibration Point	H in. of water	$[H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (m ³ /min) X - axis	W in. of oil	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ Y-axis
1	7.1	2.69	1.35	4.6	2.17
2	5.8	2.44	1.22	3.9	2.00
3	4.5	2.15	1.08	3.1	1.78
4	3.5	1.89	0.95	2.6	1.63
5	2.5	1.60	0.81	2.0	1.43

By Linear Regression of Y on X
 Slope, mw = 1.3709 Intercept, bw = 0.3187
 Correlation Coefficient* = 0.9992

Set Point Calculation
 From the TSP Field Calibration Curve, take Qstd = 1.21 m³/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 = $(m \times Qstd + b)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.82

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

Remarks: _____

QC Reviewer: WS CHAN Signature: [Signature] Date: 26/11/15



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE
 VILLAGE OF CLEVELAND, OH
 45002
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ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Dec 09, 2014 Rootmeter S/N 0438320 Ta (K) - 293
 Operator Tisch Orifice I.D. - 0843 Pa (mm) - 755.65

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORIFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.4010	3.2	2.00
2	NA	NA	1.00	0.9950	6.4	4.00
3	NA	NA	1.00	0.8830	7.9	5.00
4	NA	NA	1.00	0.8420	8.8	5.50
5	NA	NA	1.00	0.6960	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0069	0.7187	1.4221	0.9957	0.7107	0.8806
1.0027	1.0077	2.0112	0.9915	0.9965	1.2454
1.0006	1.1332	2.2486	0.9894	1.1206	1.3924
0.9994	1.1870	2.3584	0.9883	1.1738	1.4603
0.9942	1.4285	2.8443	0.9831	1.4126	1.7612
Qstd slope (m) = 1.99924			Qa slope (m) = 1.25189		
intercept (b) = -0.01238			intercept (b) = -0.00766		
coefficient (r) = 0.99990			coefficient (r) = 0.99990		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

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 K₀: 12500
 Last Calibration Date*: 7 May 2015

*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 ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
			Temp (°C)	R.H. (%)			
1	08-05-15	09:15 - 10:15	26.9	76	0.04417	1763	29.38
2	08-05-15	10:15 - 11:15	26.9	76	0.04625	1851	30.85
3	08-05-15	11:15 - 12:15	26.9	77	0.04513	1805	30.08
4	08-05-15	12:15 - 13:15	27.1	77	0.04828	1926	32.10

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: 0.9983

Validity of Calibration Record: 8 May 2016

Remarks:

QC Reviewer: YW Fung Signature:  Date: 11 May 2015

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 K₀: 12500
 Last Calibration Date*: 7 May 2015

*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 ¹ (mg/m ³) Y-axis	Total Count ²	Count/ Minute ³ X-axis
			Temp (°C)	R.H. (%)			
1	08-05-15	13:15 - 14:15	27.1	77	0.04986	1994	33.23
2	08-05-15	14:15 - 15:15	27.1	77	0.05083	2037	33.95
3	08-05-15	15:15 - 16:15	27.1	77	0.05012	2003	33.38
4	08-05-15	16:15 - 17:15	27.1	76	0.05241	2095	34.92

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: 0.9968

Validity of Calibration Record: 8 May 2016

Remarks:

QC Reviewer: YW Fung

Signature: 

Date: 11 May 2015



CERTIFICATE OF CALIBRATION

Certificate No.: 15CA0317 03 Page 1 of 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2238	,	4188
Serial/Equipment No.:	2285692	,	2791211
Adaptors used:	-	,	-

Item submitted by

Customer Name: AECOM ASIA CO., LTD.
Address of Customer: -
Request No.: -
Date of receipt: 17-Mar-2015

Date of test: 18-Mar-2015

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	20-Jun-2015	CIGISMEC
Signal generator	DS 360	33873	09-Apr-2015	CEPREI
Signal generator	DS 360	61227	09-Apr-2015	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1010 ± 5 hPa

Test specifications

- 1, 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.
- 2, 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%.
- 3, 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 responses 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: 19-Mar-2015

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

(Continuation Page)

Certificate No.: 15CA0317 03 Page 2 of 2

1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	1.0	2.1
	Lin	Pass	2.0	2.2
Linearity range for Leq	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range , Step 5 dB at 4 kHz	Pass	0.3	
	A	Pass	0.3	
	C	Pass	0.3	
Frequency weightings	Lin	Pass	0.3	
	Time weightings	Single Burst Fast	Pass	0.3
	Single Burst Slow	Pass	0.3	
Peak response	Single 100µs rectangular pulse	Pass	0.3	
	R.M.S. accuracy	Crest factor of 3	Pass	0.3
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/10 ³ at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/10 ⁴ at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by:		Checked by:	
Date:	18-Mar-2015	Date:	19-Mar-2015

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



CERTIFICATE OF CALIBRATION

Certificate No.: 15CA0703 02-02 Page 1 of 2

Item tested

Description:	Sound Level Meter (Type 1)	,	Microphone
Manufacturer:	B & K	,	B & K
Type/Model No.:	2238	,	4188
Serial/Equipment No.:	2800927	,	2791214
Adaptors used:	-	,	-

Item submitted by

N-009 06
Customer Name: AECOM ASIA CO., LTD.
Address of Customer: -
Request No.: -
Date of receipt: 03-Jul-2015

Date of test: 04-Jul-2015

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	19-Jun-2016	CIGISMEC
Signal generator	DS 360	33873	16-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1000 ± 5 hPa

Test specifications

- 1, 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.
- 2, 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%.
- 3, 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: 06-Jul-2015

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

(Continuation Page)

Certificate No.: 15CA0703 02-02 Page 2 of 2

1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	2.1
	C	Pass	1.0	
	Lin	Pass	2.0	
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	2.2
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
Linearity range for SPL	A	Pass	0.3	
	C	Pass	0.3	
	Lin	Pass	0.3	
Time weightings	Single Burst Fast	Pass	0.3	
	Single Burst Slow	Pass	0.3	
Peak response	Single 100µs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/10 ³ at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/10 ⁴ at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
Overload indication	SPL	Pass	0.3	
	Leq	Pass	0.4	

2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by:

Date: 04-Jul-2015

Fung Chi Yip

Checked by:

Date: 06-Jul-2015

Lam Tze Wai

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.



CERTIFICATE OF CALIBRATION

Certificate No.: 15CA0422 02

Page: 1 of 2

Item tested

Description: Acoustical Calibrator (Class 1)
Manufacturer: Rion Co., Ltd.
Type/Model No.: NC-74
Serial/Equipment No.: 34246490
Adaptors used: Yes (N-004.10)

Item submitted by

Customer: AECOM ASIA CO., LTD.
Address of Customer: -
Request No.: -
Date of receipt: 22-Apr-2015

Date of test: 28-Apr-2015

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	15-Apr-2016	SCL
Preamplifier	B&K 2673	2239857	22-Apr-2016	CEPREI
Measuring amplifier	B&K 2610	2346941	22-Apr-2016	CEPREI
Signal generator	DS 360	61227	16-Apr-2016	CEPREI
Digital multi-meter	34401A	US36087050	17-Apr-2016	CEPREI
Audio analyzer	8903B	GB41300350	17-Apr-2016	CEPREI
Universal counter	53132A	MY40003662	16-Apr-2016	CEPREI

Ambient conditions

Temperature: 21 ± 1 °C
Relative humidity: 60 ± 10 %
Air pressure: 1005 ± 5 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/Eeng Jun Qi

Date: 29-Apr-2015

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

(Continuation Page)

Certificate No.: 15CA0422 02 Page: 2 of 2

1, Measured Sound Pressure Level

The output Sound Pressure Level in the calibrator head was measured at the setting and frequency shown using a calibrated laboratory standard microphone and insert voltage technique. The results are given in below with the estimated uncertainties.

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	(Output level in dB re 20 μ Pa)	
			Estimated Uncertainty dB	Expanded
1000	94.00	94.27	0.10	

2, Sound Pressure Level Stability - Short Term Fluctuations

The Short Term Fluctuations was determined by measuring the maximum and minimum of the fast weighted DC output of the B&K 2610 measuring amplifier over a 20 second time interval as required in the standard. The Short Term Fluctuation was found to be:

At 1000 Hz STF = 0.002 dB

Estimated expanded uncertainty 0.005 dB

3, Actual Output Frequency

The determination of actual output frequency was made using a B&K 4180 microphone together with a B&K 2673 preamplifier connected to a B&K 2610 measuring amplifier. The AC output of the B&K 2610 was taken to an universal counter which was used to determine the frequency averaged over 20 second of operation as required by the standard. The actual output frequency at 1 KHz was:

At 1000 Hz Actual Frequency = 1001.9 Hz

Estimated expanded uncertainty 0.1 Hz Coverage factor k = 2.2

4, Total Noise and Distortion

For the Total Noise and Distortion measurement, the unfiltered AC output of the B&K 2610 measuring amplifier was connected to an Agilent Type 8903 B distortion analyser. The TND result at 1 KHz was:

At 1000 Hz TND = 1.3 %

Estimated expanded uncertainty 0.7 %

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by:

Fung Chi Yip

Date: 28-Apr-2015

Checked by:

Lam Tze Wai

Date: 29-Apr-2015

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

**APPENDIX F
EM&A MONITORING SCHEDULES**

Contract No. HY/2012/06
Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange
Impact Monitoring and Audit Schedule for November 2015

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

Contract No. HY/2012/06
Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange
Tentative Impact Monitoring and Audit Schedule for December 2015

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

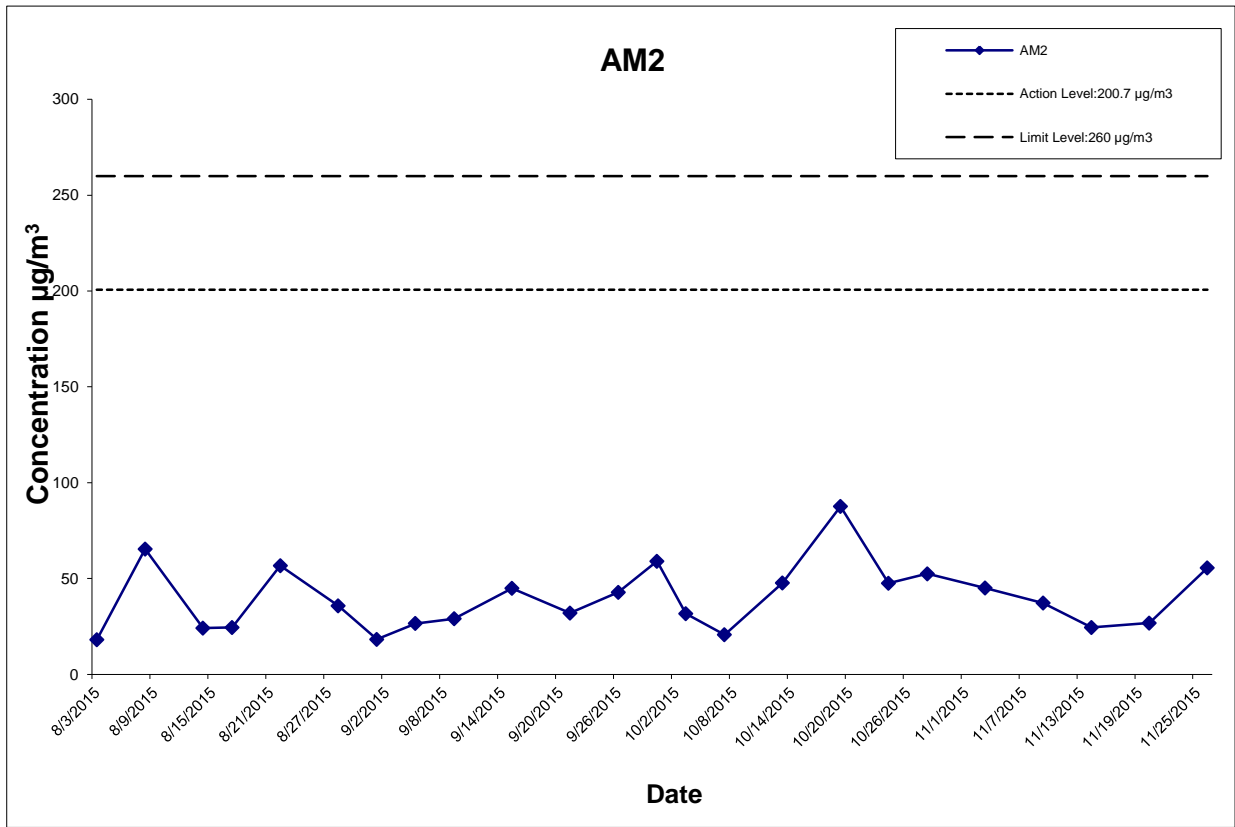
The schedule is subject to change due to unforeseeable circumstances (e.g. adverse weather, etc)

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

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 ³ /min.)		Av. flow (m ³ /min)	Total vol. (m ³)	Filter Weight (g)		Particulate weight(g)	Elapse Time		Sampling Time(hrs.)	Conc. (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)
				Initial	Final			Initial	Final		Initial	Final				
3-Nov-15	Sunny	23.7	1019.5	1.314	1.314	1.314	1892.2	2.8270	2.9124	0.0854	6338.03	6362.03	24.00	45.1	200.7	260
9-Nov-15	Sunny	26.7	1015.8	1.314	1.314	1.314	1892.2	2.8287	2.8991	0.0704	6362.03	6386.03	24.00	37.2	200.7	260
14-Nov-15	Cloudy	24.3	1014.5	1.314	1.314	1.314	1892.2	2.7789	2.8252	0.0463	6386.03	6410.03	24.00	24.5	200.7	260
20-Nov-15	Sunny	24.8	1017.2	1.314	1.314	1.314	1892.2	2.8246	2.8754	0.0508	6410.03	6434.03	24.00	26.8	200.7	260
26-Nov-15	Sunny	18.2	1020.6	1.314	1.314	1.314	1892.2	2.7640	2.8691	0.1051	6434.03	6458.03	24.00	55.5	200.7	260
													Average	33.4		
													Min	24.5		
													Max	45.1		



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



Graphical Presentation of Impact 24-hour TSP Monitoring Results

Project No.: 60307376

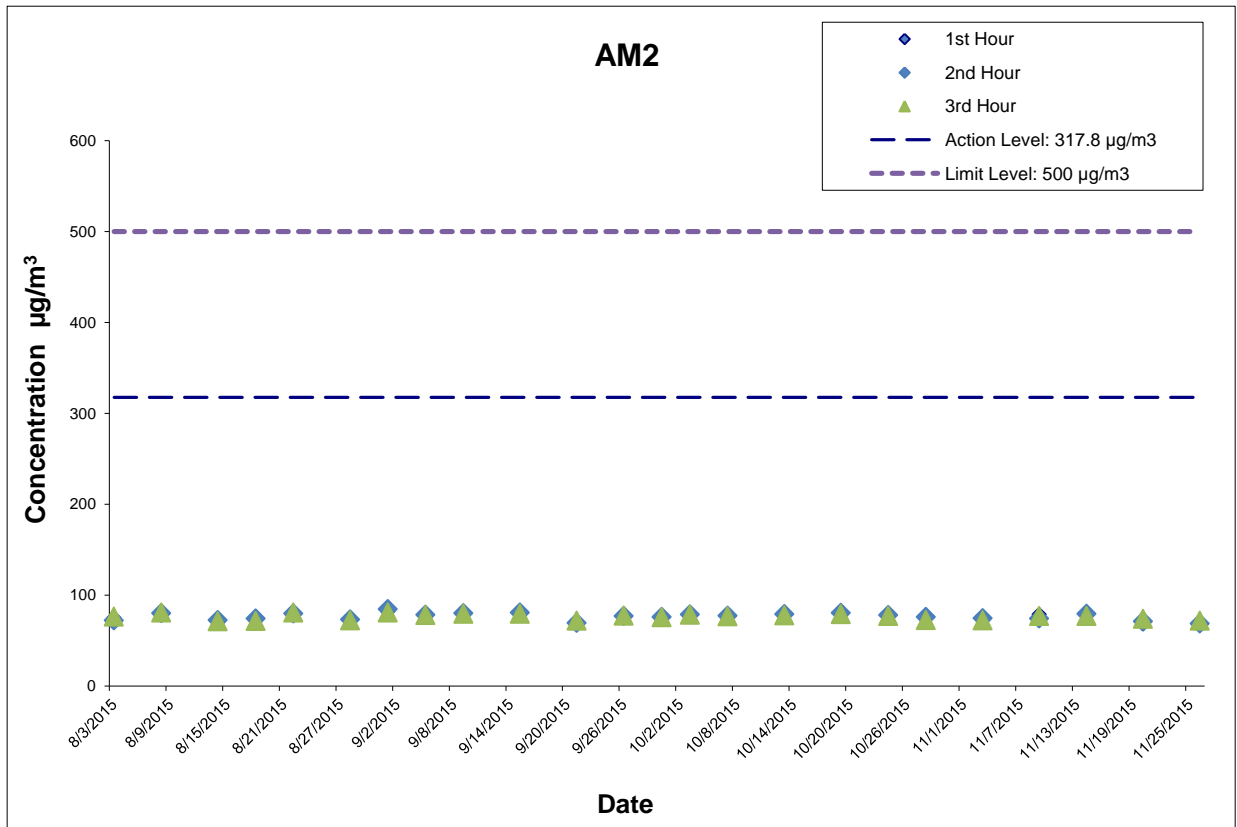
Date: Dec-15

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	2nd Hour	3rd Hour
		Conc. ($\mu\text{g}/\text{m}^3$)	Conc. ($\mu\text{g}/\text{m}^3$)	Conc. ($\mu\text{g}/\text{m}^3$)
3-Nov-15	14:00	73.3	74.6	72.4
9-Nov-15	14:00	78.8	74.5	77.3
14-Nov-15	13:34	78.5	79.6	77.2
20-Nov-15	13:00	68.6	71.4	73.9
26-Nov-15	14:05	67.6	68.9	71.8
		Average	73.9	
		Min	67.6	
		Max	79.6	



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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

Project No.: 60307376

Date: Dec-15

Appendix G

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

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Daily Extract of Meteorological Observations , November 2015 - Tai Mei Tuk

Year Month

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)					
01	***	23.0	21.3	18.9	***	***	0.0	040	14.8
02	***	25.5	21.6	18.6	***	***	0.0	070	7.2
03	***	26.2	23.4	21.2	***	***	0.0	120	12.9
04	***	27.4	24.3	22.1	***	***	0.0	070	11.6
05	***	28.3	25.6	23.6	***	***	0.0	100	13.7
06	***	27.9	25.6	24.7	***	***	0.0	120	19.3
07	***	28.9	26.1	25.0	***	***	0.0	110	15.8
08	***	29.6	26.2	24.3	***	***	0.0	100	12.3
09	***	31.3	26.6	24.1	***	***	0.0	150	8.5
10	***	26.4	23.9	22.3	***	***	1.5	120	19.0
11	***	25.5	23.8	22.3	***	***	0.0	120	24.0
12	***	24.4	23.9	23.5	***	***	0.0	110	26.4
13	***	25.5	23.1	20.3	***	***	3.5	100	17.8
14	***	27.9	24.0	20.8	***	***	0.0	290	5.4
15	***	25.0	24.5	24.2	***	***	0.0	110	27.2
16	***	25.4	24.5	23.5	***	***	9.5	100	20.8
17	***	30.5	25.9	24.2	***	***	0.0	080	10.2
18	***	30.7	26.1	23.7	***	***	0.0	150	4.2
19	***	28.6	25.5	24.1	***	***	0.0	100	12.2
20	***	26.4	24.5	23.5	***	***	0.0	110	12.5
21	***	26.2	24.6	23.2	***	***	0.0	110	17.1
22	***	28.9	25.4	23.7	***	***	0.0	110	14.9
23	***	29.9	25.2	22.7	***	***	0.0	050	11.7
24	***	27.1	24.0	22.1	***	***	0.0	050	13.5
25	***	26.3	21.8	16.1	***	***	0.0	060	16.2
26	***	21.5	17.0	13.8	***	***	0.0	050	16.0
27	***	20.5	17.4	13.0	***	***	0.0	060	14.9
28	***	23.2	20.2	17.5	***	***	0.0	110	15.5
29	***	26.4	22.1	19.0	***	***	0.0	060	7.8
30	***	25.7	22.1	19.2	***	***	0.0	280	6.8

*** unavailable

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

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Daily Extract of Meteorological Observations , November 2015 - Tai Po

Year Month

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)					
01	1021.1	23.4	21.4	18.6	16.3	73	***	***	***
02	1020.1	23.8	20.6	18.1	13.9	66	***	***	***
03	1019.3	25.4	23.0	20.6	17.8	73	***	***	***
04	1018.0	26.2	24.3	22.2	19.8	76	***	***	***
05	1016.0	27.3	25.6	24.0	21.7	79	***	***	***
06	1015.4	27.1	25.4	24.2	21.9	81	***	***	***
07	1016.1	27.3	25.9	24.9	23.0	84	***	***	***
08	1016.1	28.2	26.0	24.5	23.2	85	***	***	***
09	1015.6	29.5	26.4	23.3	22.6	81	***	***	***
10	1016.9	25.5	24.1	22.7	20.6	81	***	***	***
11	1017.5	24.8	23.8	22.5	19.9	79	***	***	***
12	1017.1	24.1	23.7	23.2	20.7	83	***	***	***
13	1015.2	24.5	22.5	19.8	21.1	92	***	***	***
14	1014.5	27.0	23.3	20.3	20.4	84	***	***	***
15	1015.0	24.7	24.3	23.1	21.6	85	***	***	***
16	1013.4	26.1	24.6	23.0	22.8	90	***	***	***
17	1013.5	28.6	25.7	24.0	22.9	85	***	***	***
18	1015.7	29.2	25.8	22.7	23.2	86	***	***	***
19	1016.8	27.7	25.5	23.4	22.5	84	***	***	***
20	1016.9	25.2	24.5	23.3	21.2	82	***	***	***
21	1016.9	25.7	24.6	23.4	20.6	79	***	***	***
22	1016.9	27.9	25.4	23.1	21.1	78	***	***	***
23	1016.5	27.7	25.0	22.7	20.5	77	***	***	***
24	1016.6	26.2	23.6	21.1	19.1	76	***	***	***
25	1017.8	25.6	21.6	16.5	15.8	71	***	***	***
26	1021.1	22.0	16.6	13.4	5.7	50	***	***	***
27	1022.8	20.1	17.0	11.5	8.4	57	***	***	***
28	1022.6	22.6	20.3	18.4	14.2	68	***	***	***
29	1021.1	25.0	21.6	18.8	16.5	73	***	***	***
30	1018.9	24.5	21.5	18.8	16.6	75	***	***	***

*** unavailable

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**

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*		
3-Nov-15	14:30	69.7	72.0	67.0	75	N
9-Nov-15	13:15	69.6	72.3	67.0	75	N
20-Nov-15	14:00	69.1	71.5	66.5	75	N
26-Nov-15	15:00	68.6	70.0	66.5	75	N
	Min	68.6	70.0	66.5		
	Max	69.7	72.3	67.0		
	Average	69.3	71.5	66.8		

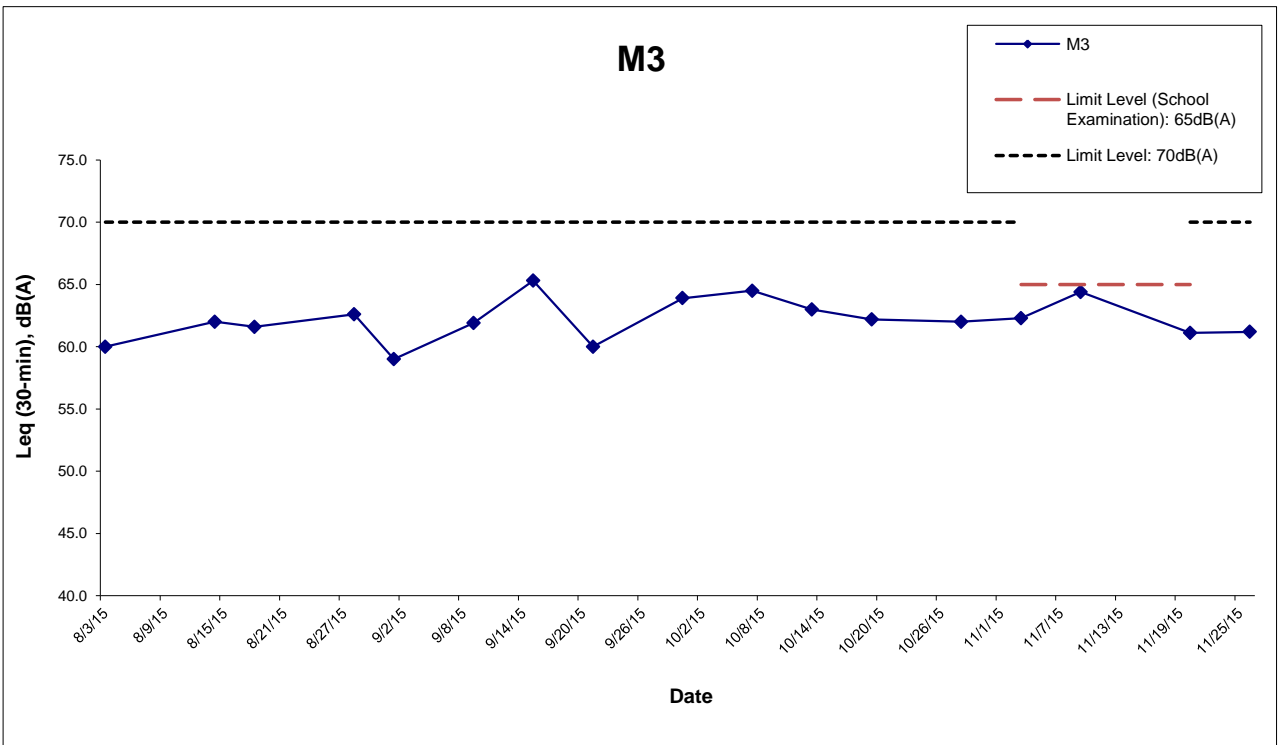
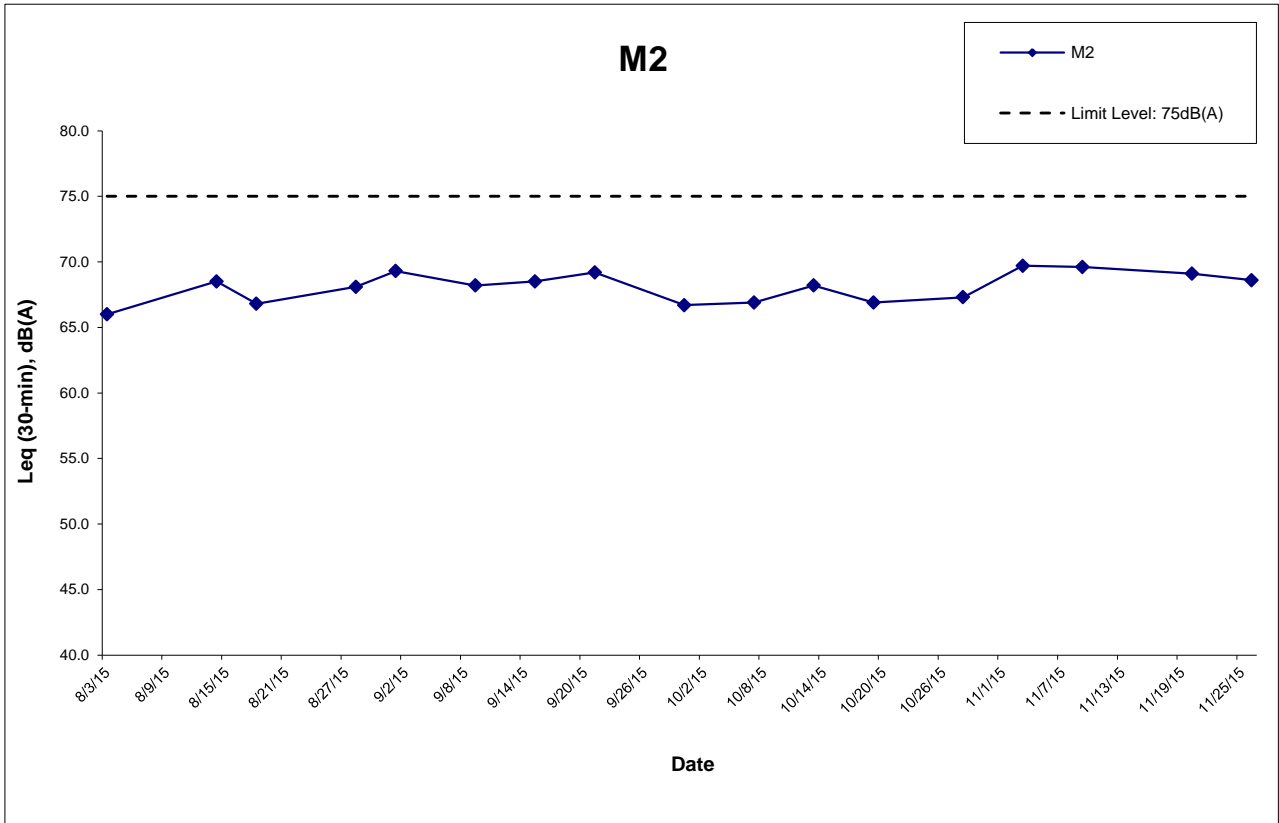
Location : M3 (Fanling Government Secondary School- Façade)

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		
3-Nov-15	14:00	62.3	63.5	60.0	70	N
9-Nov-15	14:00	64.4	67.3	61.2	65	N
20-Nov-15	13:00	61.1	62.5	59.5	70	N
26-Nov-15	14:05	61.2	62.5	59.0	70	N
	Min	61.1	62.5	59.0		
	Max	64.4	67.3	61.2		
	Average	62.5	64.5	60.0		

* +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

**APPENDIX J
EVENT ACTION PLAN**

Appendix J – Event Action Plan

Event / Action Plan for Air Quality

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

Event / Action Plan for Air Quality

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

Event / Action Plan for Noise Impact

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

**APPENDIX K
SITE INSPECTION SUMMARIES**

Site Inspection Summary

Inspection Information

Contract No.	HY/2012/06
Date:	3 November 2015
Time:	14:00
Inspection No.:	103

Non-compliance

Nil

Observations

<u>Follow-up Observation(s)</u>
1. Stagnant water on H-beam was removed. (Closed)
2. Open stockpile was covered entirely. (Closed)
<u>New Observation(s)</u>
3. Stagnant water was observed in U-channel at SA340. The Contractor should remove the stagnant water.
4. The access road was observed to be dry at SA340. The Contractor should dampen the road to reduce dust generation.
<u>Reminder(s)</u>
Nil.

Remarks

Nil

	Name	Signature	Date
Prepared by	Oscar Yip		5 November 2015
Checked by	Y W Fung		5 November 2015

Site Inspection Summary

Inspection Information

Contract No.	HY/2012/06
Date:	10 November 2015
Time:	14:00
Inspection No.:	104

Non-compliance



Nil

Observations

<p><u>Follow-up Observation(s)</u></p> <ol style="list-style-type: none"> 1. Stagnant water in the U-channel was under pumping. (Closed) 2. The access road was dampened. (Closed) <p><u>New Observation(s)</u></p> <ol style="list-style-type: none"> 3. Construction waste was observed accumulated. The Contractor should remove the waste frequently. 4. Open stockpile was observed uncovered. The Contractor should cover the stockpile with impervious sheeting to prevent dust generation. 5. Mud stain and oil stain were observed on ground. The Contractor should remove the stain properly. <p><u>Reminder(s)</u></p> <p>Nil.</p>
--

Remarks

Nil

	Name	Signature	Date
Prepared by	Oscar Yip		17 November 2015
Checked by	Y W Fung		17 November 2015

Site Inspection Summary

Inspection Information

Contract No.	HY/2012/06
Date:	19 November 2015
Time:	14:00
Inspection No.:	105

Non-compliance



Nil

Observations

<p><u>Follow-up Observation(s)</u></p> <ol style="list-style-type: none"> 1. The construction waste was removed. (Closed) 2. The stockpile was covered. (Closed) 3. The mud stain and oil stain were removed. (Closed) <p><u>New Observation(s)</u></p> <ol style="list-style-type: none"> 4. An air compressor was observed with missing noise emission label (NEL) at Tai Hung Footbridge. The Contractor should provide the valid NEL on the air compressor. 5. Several open site areas were observed to be dry. The Contractor should enhance the water spraying. 6. Mud with oil stain was observed at NB48. The Contractor should remove the mud and treat it as chemical waste. <p><u>Reminder(s)</u></p> <p>Nil.</p>
--

Remarks

Nil

	Name	Signature	Date
Prepared by	Oscar Yip		23 November 2015
Checked by	Y W Fung		23 November 2015

Site Inspection Summary

Inspection Information

Contract No.	HY/2012/06
Date:	24 November 2015
Time:	14:00
Inspection No.:	106

Non-compliance

Nil

Observations

Follow-up Observation(s)

- NEL is provided to the air compressor. (Closed)
- Watering for bared ground surface has been arranged. (Closed)
- Soil stained with oil has been removed. (Closed)

New Observation(s)

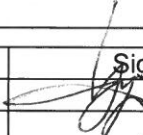

Nil.

Reminder(s)

Nil.

Remarks

Nil

	Name	Signature	Date
Prepared by	Oscar Yip		30 November 2015
Checked by	Y W Fung		30 November 2015

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

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
Environmental complaints	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	0	5
	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		

Date Received	Subject	Status	Total no. followed up by the ET this month	Total no. followed up by the ET since project commencement
23 October 2014	<p>EPD referred an air complaint on 24 October 2014.</p> <p>A resident complained against the excavation works of Tai Wo Service Road West between Nam Wah Po & Tai Hang Tsuen, which have piled up high stockpiles, causing serious dust nuisance to his house.</p> <p>The resident also complained that the stockpiles have not been covered and watered properly. He now requires the EPD to follow up.</p> <p>The location of complaint is near Lamppost Location EB5717.</p>	Closed		
31 December 2014	<p>EPD referred a water complaint on 31 December 2014.</p> <p>The complainant complained about the muddy river outside Tai Hang Village Office on 29 December 2014. It was suspected that the muddy water was discharged from the construction works of the Project.</p> <p>He required the EPD to follow up.</p>	Closed		

	Date Received	Subject	Status	Total no. followed up by the ET this month	Total no. followed up by the ET since project commencement
	25 March 2015	<p>EPD referred a water complaint on 25 March 2015.</p> <p>The complainant complained about the generation of the smell of gasoline from the Widening of Fanling Highway construction site on Tai Wo Service Road West, causing serious nuisance to nearby houses.</p> <p>The situation has continued for a few weeks and she asked the EPD to follow up as soon as possible.</p>	Closed		
Notification of summons	-	-	-	0	0
Successful Prosecutions	-	-	-	0	0