AECOM

Environmental Protection Department

Contract No. HY/2012/06

Widening of Fanling Highway - Tai Hang to Wo Hop Shek Interchange

Monthly EM&A Report For May 2017

[6/2017]

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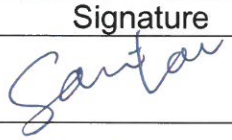
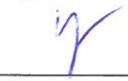
Prepared & Checked:	Sammi Lam	
Reviewed & Approved:	Y W Fung	

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Environmental Monitoring and Audit (EM&A) for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Stage 2 (between Tai Hang to Wo Hop Shek Interchange)
Environmental Permit No. EP-324/2008/E Condition 3.3 – Submission of Monthly EM&A Report – May 2017 for the portion of Stage 2 works under Contract No. HY/2012/06

13 June 2017
By Fax (2805 5028) & Hand

We refer to the revised Monthly EM&A Report – May 2017 received on 13 June 2017 submitted by the Environmental Team via email. Pursuant to Environmental Permit Condition 3.3, I hereby verify the Monthly EM&A Report – May 2017 (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	By Fax (2714 5198)
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EXECUTIVE SUMMARY

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

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

The 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, EP-324/2008/C and EP-324/2008/D on 31 January 2012, 17 March 2014, 27 March 2015 and 27 August 2015 respectively. The current valid VEP was applied on 29 December 2016 and the VEP (EP-324/2008/E) was subsequently granted on 26 January 2017.

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 three 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". In addition, Contract No. "Provision of Bus-Bus Interchange on Fanling Highway Kowloon Bound" was carried out within the site boundary of Contract No. 02/HY/2015. This report focuses on Contract No. HY/2012/06 "Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange" in Stage 2 of the Project and "Provision of Bus-Bus Interchange on Fanling Highway Kowloon Bound" under Works Order Nos. CB128520-5 and CB128519-0 in Contract No. 02/HY/2015 "Highway Department Term Contract (Management and Maintenance of Roads in Tai Po and North District excluding High Speed Roads 2016-2022)".

Pursuant to the EP (EP-324/2008/E) 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 31 May 2017. As informed by the Contractor, construction activities of Contract No. HY/2012/06 in the reporting period were:

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

As informed by the Contractor, construction activities of Works Order Nos. CB128520-5 and CB128519-0 under Contract No. 02/HY/2015 in the reporting period were:

- ELS
- Construction of footing
- Construction of stem wall

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

One (1) noise-related complaint was received on 23 May 2017. The complaint is still under investigation by the Environmental Team at the time of reporting. The details of the complaint are described in Section 4.6.4.

No 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 Variation of Environmental Permits of EP-324/2008/A, EP-324/2008/B, EP-324/2008/C and EP-324/2008/D on 31 January 2012, 17 March 2014, 27 March 2015 and 27 August 2015 respectively. The current valid VEP was applied on 29 December 2016 and the VEP (EP-324/2008/E) was subsequently granted on 26 January 2017.

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". In addition, Contract No. "Provision of Bus-Bus Interchange on Fanling Highway Kowloon Bound" was carried out within the site boundary of Contract No. 02/HY/2015. This report focuses on Contract No. HY/2012/06 "Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange" in Stage 2 of the Project and "Provision of Bus-Bus Interchange on Fanling Highway Kowloon Bound" under Works Order Nos. CB128520-5 and CB128519-0 in Contract No. 02/HY/2015 "Highway Department Term Contract (Management and Maintenance of Roads in Tai Po and North District excluding High Speed Roads 2016-2022)".

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 Contract No. HY/2012/06).

1.1.7. China State Construction Engineering (Hong Kong) Ltd. (CSHK) was commissioned as the Contractor of Contract No. HY/2012/06. Chiu Hing Construction & Transportation Company Limited (Chiu Hing) was commissioned as the Contractor of Contract No. 02/HY/2015.

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 forty-third 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 May 2017.

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 of [HY/2012/06] (China State Construction Engineering (Hong Kong) Limited)	Environmental Officer	Michael Tsang	9277 4956	2672 2501
		C C Chow	9679 6315	2672 2501
Contractor of [02/HY/2015] (Chiu Hing Construction & Transportation Company Limited)	Safety Officer	Marty Tai	9106 5318	-
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 of Contract No. HY/2012/06 carried out by the Contractor in this reporting period are listed below:

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

Details of the construction works of Works Order Nos. CB128520-5 and CB128519-0 under Contract No. 02/HY/2015 carried out by the Contractor in this reporting period are listed below:

- ELS
- Construction of footing
- Construction of stem wall

1.4.3 The Construction Programme is shown in Appendix B.

1.4.4 The general layout plan of the Project site of Contract No. HY/2012/06 and Works Order Nos. CB128520-5 and CB128519-0 under 02/HY/2015 showing the contract areas are shown in Figure 1.1 and Figure 1.2 respectively.

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 1.3a.

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 ±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 ±5%. A convenient working RH was 40%.
(iii) All filter papers were prepared and analysed by ALS Technichem (HK) Pty Ltd., which is a HOKLAS accredited laboratory and has comprehensive quality assurance and quality control programmes.

(c) Field Monitoring

(i) The power supply was checked to ensure the HVS works properly.
(ii) The filter holder and the area surrounding the filter were cleaned.
(iii) The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
(iv) The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
(v) The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied was sufficient to avoid air leakage at the edges.
(vi) Then the shelter lid was closed and was secured with the aluminum strip.
(vii) The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
(viii) A new flow rate record sheet was set into the flow recorder.
(ix) On site temperature and atmospheric pressure readings were taken and the flow rate of the HVS was checked and adjusted at around 1.1 m^3/min, and complied with the range specified in the updated EM&A Manual (i.e. 0.6-1.7 m^3/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 May 2017 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 ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
AM2 (Fanling Government Secondary School)	70.4	65.3 – 77.2	317.8	500

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

Location	Average ($\mu g/m^3$)	Range ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
AM2 (Fanling Government Secondary School)	38.6	17.4 – 86.2	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-73

3.3 Monitoring Locations

3.3.1 Monitoring stations M2 and M3 were set up at the proposed locations in accordance with updated EM&A Manual. Figure 1.3a-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 May 2017 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

Location	Average, dB(A), $L_{eq\ (30\ mins)}$	Range, dB(A), $L_{eq\ (30\ mins)}$	Limit Level, dB(A), $L_{eq\ (30\ mins)}$
M2* (West Tai Wo)	69.1	67.7 – 69.7	75
M3# (Fanling Government Secondary School)	63.8	60.1 – 65.1	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, 5 site inspections were carried out respectively on 2, 9, 18, 23 and 31 May 2017 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:

Contract No. HY/2012/06

Air Quality

4.1.4 Exposed stockpiles of dusty materials were found at SA340. The Contractor should cover the stockpiles entirely by impervious sheeting to avoid potential windblown dust emission.

4.1.5 Water sprayed on open site area was found inadequate at NB75. The Contractor should spray the open site area with adequate water to prevent potential windblown dust emission.

4.1.6 Mud trail was observed at SA328. The Contractor should clean up the mud trail and ensure the wheel washing facility is operated properly.

4.1.7 Non-Road Mobile Machineries (NRMM) without proper labels were found at NB54b and NB63. The Contractor should ensure valid labels are provided to all NRMM before operation.

4.1.8 Dusty road was observed at NB77. The Contractor should provide sufficient measures to keep the road clear of dusty materials.

4.1.9 Water sprayed for open site area was found inadequate at SA328. The Contractor should spray the open site area with adequate water to avoid windblown dust emission.

Noise

4.1.10 No adverse observation was identified in the reporting period.

Water Quality

4.1.11 Surface runoff of muddy water was observed at SA340. The Contractor should remove the muddy water and implement effective measures to prevent sand from being flushed to public road.

Chemical and Waste Management

4.1.12 Construction wastes were found scattered on ground at SA346, SA328 and Tai Wo Bridge. The Contractor should remove the wastes and maintain the site clean and tidy.

4.1.13 Chemical container without secondary containment was observed at SA320. The Contractor should provide drip tray to avoid potential leakage.

Landscape and Visual Impact

4.1.14 No adverse observation was identified in the reporting period.

Miscellaneous

4.1.15 Stagnant water was observed at NB64 and NB48. The Contractor should remove the stagnant water or apply larvicidal oil to prevent mosquito breeding.

4.1.16 Retained water was observed in the drip tray at SA346. The Contractor should remove the retained water to avoid mosquito breeding.

Contract No. 02/HY/2015 (Works Order Nos. CB128520-5 and CB128519-0)

Air Quality

4.1.17 Mud trail was observed. The Contractor should clean up the mud trail for dust suppression, ensure the wheel washing facility is operated properly and vehicles are wheel-washed properly before leaving the site.

4.1.18 Exposed stockpile without proper cover was observed. The Contractor should cover the stockpile entirely with impervious sheeting to prevent windblown dust emission.

Noise

4.1.19 No adverse observation was identified in the reporting period.

Water Quality

4.1.20 No adverse observation was identified in the reporting period.

Chemical and Waste Management

4.1.21 No adverse observation was identified in the reporting period.

Landscape and Visual Impact

4.1.22 No adverse observation was identified in the reporting period.

Miscellaneous

4.1.23 Stagnant water was observed. The Contractor should remove the stagnant water or apply larvicidal oil to prevent mosquito breeding.

4.2 Advice on the Solid and Liquid Waste Management Status

4.2.1 Contract No. HY/2012/06 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 of Contract No. HY/2012/06, 3,182 m^3 of inert C&D material was generated in the reporting month (922 m^3 disposed of as public fill to Tuen Mun 38, 403 m^3 of inert C&D materials was reused on site, 1,722 m^3 of inert C&D materials was reused in other projects and 135m^3 was broken concrete). For C&D wastes, 105 m^3 of general refuse was disposed of at NENT landfill, 58 kg of paper/cardboard packaging, 0 kg of plastics and 0 kg of metals were collected by recycling Contractors, and 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 for Contract No. HY/2012/06

Waste Type	Actual Amount	Disposal/Reuse Locations
Inert C&D materials disposed as public fill	922 m^3	Tuen Mun 38
Broken concrete	135 m^3	Tuen Mun 38
C&D wastes disposed as general refuse	105 m^3	NENT Landfill
Paper/cardboard packaging	58 kg	Recycling Facilities
Plastics	0 kg	Recycling Facilities
Metals	0 kg	Recycling Facilities
C&D materials reused on site	403 m^3	Site Area
C&D materials reused in other projects	1,722 m^3	Other projects
Chemical wastes	0 kg	Licensed Contractors

4.2.4 As advised by the Contractor of Works Order Nos. CB128520-5 and CB128519-0 under Contract No. 02/HY/2015, 21 m^3 of inert C&D material was generated in the reporting month (20 m^3 disposed of as public fill to Tuen Mun 38, 0 m^3 of inert C&D materials was reused on site, 0 m^3 of inert C&D materials was reused in other projects and 1 m^3 was broken concrete). For C&D wastes, 0 m^3 of general refuse was disposed of at NENT landfill, 1 kg of paper/cardboard packaging, 1 kg of plastics and 0 kg of metals were collected by recycling Contractors in the reporting period.

4.2.5 The actual amounts of different types of waste generated by the activities of the Project in the reporting period are shown in Table 4.2.

Table 4.2 Summary of Waste Flow Table for Contract No. 02/HY/2015 (Works Order Nos. CB128520-5 and CB128519-0)

Waste Type	Actual Amount	Disposal/Reuse Locations
Inert C&D materials disposed as public fill	20 m^3	Tuen Mun 38
Broken concrete	1 m^3	Tuen Mun 38
C&D wastes disposed as general refuse	0 m^3	NENT Landfill
Paper/cardboard packaging	1 kg	Recycling Facilities
Plastics	1 kg	Recycling Facilities

Waste Type	Actual Amount	Disposal/Reuse Locations
Metals	0 kg	Recycling Facilities
C&D materials reused on site	0 m^3	Site Area
C&D materials reused in other projects	0 m^3	Other projects

4.2.6 The Contractors were 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 4.3.

Table 4.3 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/E	26/01/2017	N/A	HyD	
WPCO	Discharge License (Site)	WT00017159-2013	18/09/2013	30/09/2018	CSHK	--
		WT00027968-2017	22/5/2017	31/5/2022	Chiu Hing	--
WDO	Chemical Waste Producer Registration	5213-722-C3822-01	05/09/2013	N/A	CSHK	Chemical waste produced in Contract HY/2012/06
WDO	Billing Account for Disposal of Construction Waste	7017860	N/A	N/A	CSHK	Waste disposal in Contract HY/2012/06
		7024392	N/A	N/A	Chiu Hing	Waste disposal in Contract 02/HY/2015
APCO	Notification Under Air Pollution Control (Construction Dust) Regulation	361991	15/07/2013	N/A	Chiu Hing	--
		414360	08/03/2017	N/A	Chiu Hing	--
NCO	Construction Noise Permit	GW-RN0914-16	20/12/2016	31/05/2017	CSHK	Zone 2 Demo;ition of NWPFB near Ho Ka Yuen
		GW-RN0938-16	15/12/2016	14/06/2017	CSHK	Zone 4 Grouting for Piling Works near Wo Hop Shek Village

Statutory Reference	License/ Permit	License or Permit No.	Valid Period		License / Permit Holder	Remarks
			From	To		
		GW-RN0088-17	09/02/2017	27/05/2017	CSHK	Zone 2B Demolition of WHSB over TWSRW
		GW-RN0109-17	28/02/2017	31/05/2017	CSHK	Zone 4 Dismantling of High Mast at Slip Road from Jockey Club Road to SB of Fanling Highway
		GW-RN0151-17	14/03/2017	18/05/2017	CSHK	Zone 4 Road Marking Alternation at NB of Fanling Highway between CH23.8 and CH24.1
		GW-RN0170-17	17/03/2017	16/06/2017	CSHK	Zone 4 Tree Felling and Loading of Streetlight Pole at Southbound of Fanling Highway between CH24.1 and CH24.2
		GW-RN0207-17	30/03/2017	27/05/2017	CSHK	Zone 2 Demolition of Steel Platform P6 of KLHVB
		GW- RN0229-17	07/04/2017	15/06/2017	CSHK	Zone 4 Road Marking Alternation Southbound of Fanlling Highway near Ho Ka Yuen
		GW-RN0254-17	20/04/2017	28/07/2017	CSHK	Zone 2 Erection of metal scaffold Tai Wo Service Road West near NWP
		GW-RN0322-17	15/05/2017	29/07/2017	CSHK	Zone 2 Road Marking Alternation near KLHVB
		GW-RN0349-17	23/05/2017	21/11/2017	CSHK	Watermain Diversion_Zone 4

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 One (1) noise-related complaint was received on 23 May 2017. The complaint is still under investigation by the Environmental Team at the time of reporting. The details of the complaint are described in Section 4.6.4.

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

4.6.4 A complaint was received by the 1823 enquiry and complaint hotline on 22 May 2017. The complaint was referred to the Environmental Team by the Contractor on 23 May 2017.

4.6.5 A complainant complained that construction noise was caused by the erection of noise barrier on Tai Wo Service Road West near Tai Hang Village on Sunday(s).

4.6.6 The complainant concerned about if any Construction Noise Permit is issued by the Environmental Protection Department.

4.6.7 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 Contract No. HY/2012/06 in June 2017 will be:-

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

5.1.2 The major construction works for Works Order Nos. CB128520-5 and CB128519-0 under Contract No. 02/HY/2015 in June 2017 will be:-

- ELS
- Construction of stem wall

5.2 Key Issues for the Coming Month

5.2.1 Key issues to be considered in June 2017:-

- 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 June 2017 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 5 environmental site inspections were carried out in May 2017. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site audits.

6.1.5 One (1) noise-related complaint was received on 23 May 2017. The complaint is still under investigation by the Environmental Team at the time of reporting. The details of the complaint are described in Section 4.6.4.

6.1.6 No 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:

Contract No. HY/2012/06

Air Quality Impact

- The Contractor should cover the stockpiles entirely by impervious sheeting to avoid potential windblown dust emission.
- The Contractor should spray the open site area with adequate water to prevent potential windblown dust emission.
- The Contractor should clean up the mud trail and ensure the wheel washing facility is operated properly.
- The Contractor should ensure valid labels are provided to all NRMM before operation.
- The Contractor should provide sufficient measures to keep the road clear of dusty materials.
- The Contractor should spray the open site area with adequate water to avoid windblown dust emission.

Noise Impact

- No adverse observation was identified in the reporting period.

Water Quality Impact

- The Contractor should remove the muddy water and implement effective measures to prevent sand from being flushed to public road.

Chemical and Waste Management

- The Contractor should remove the wastes and maintain the site clean and tidy.
- The Contractor should provide drip tray to avoid potential leakage.

Landscape and Visual Impact.

- No adverse observation was identified in the reporting period.

Miscellaneous

- The Contractor should remove the stagnant water or apply larvicidal oil to prevent mosquito breeding.
- The Contractor should remove the retained water to avoid mosquito breeding.

Contract No. 02/HY/2015 (Works Order Nos. CB128520-5 and CB128519-0)

Air Quality Impact

- The Contractor should clean up the mud trail for dust suppression, ensure the wheel washing facility is operated properly and vehicles are wheel-washed properly before leaving the site.
- The Contractor should cover the stockpile entirely with impervious sheeting to prevent windblown dust emission.

Noise Impact

- No adverse observation was identified in the reporting period.

Water Quality Impact

- No adverse observation was identified in the reporting period.

Chemical and Waste Management

- No adverse observation was identified in the reporting period.

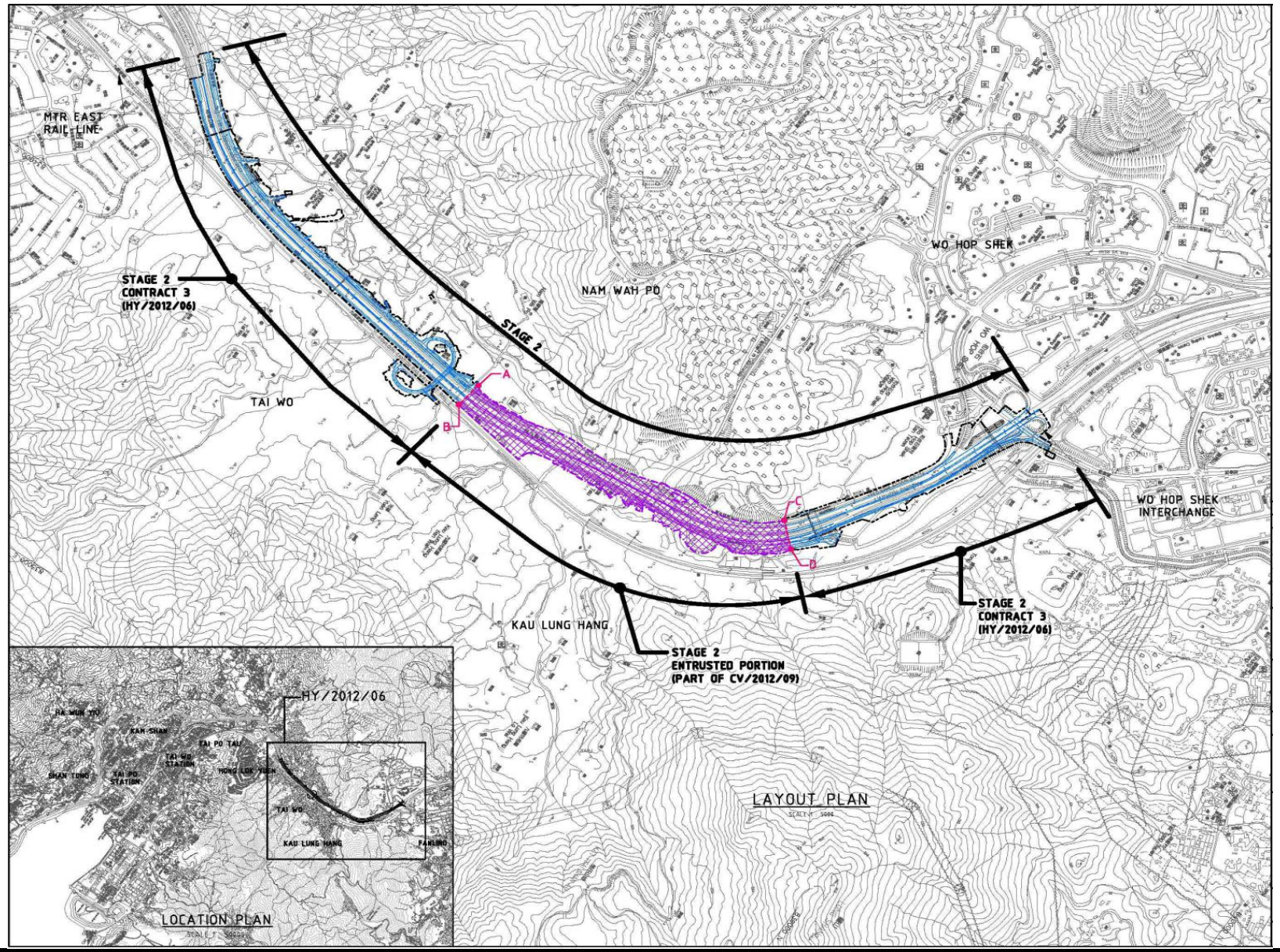
Landscape and Visual Impact.

- No adverse observation was identified in the reporting period.

Miscellaneous

- The Contractor should remove the stagnant water or apply larvicidal oil to prevent mosquito breeding.

FIGURES



	EASTING	NORTHING
A	833867.6259	837386.5638
B	833945.6833	837375.1412
C	833721.8117	838310.5250
D	833782.3083	838375.1303

CONTRACT NO. HY/2012/06

WIDENING OF FANLING HIGHWAY

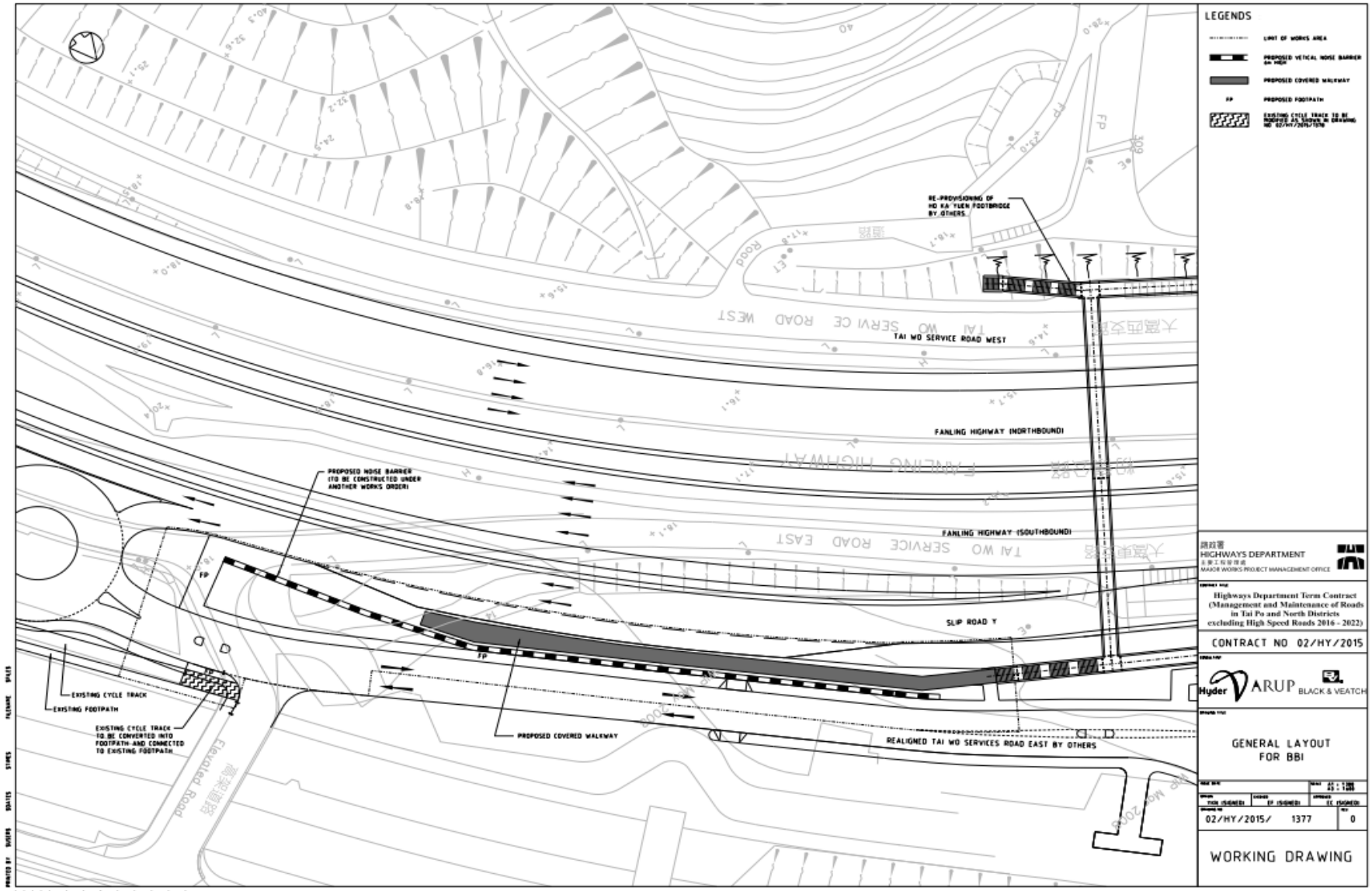
- TAI HANG TO WO HOP SHEK INTERCHANGE

AECOM

Layout Plan

Date: Dec 2013

Figure 1.1



CONTRACT NO. 02/HY/2015

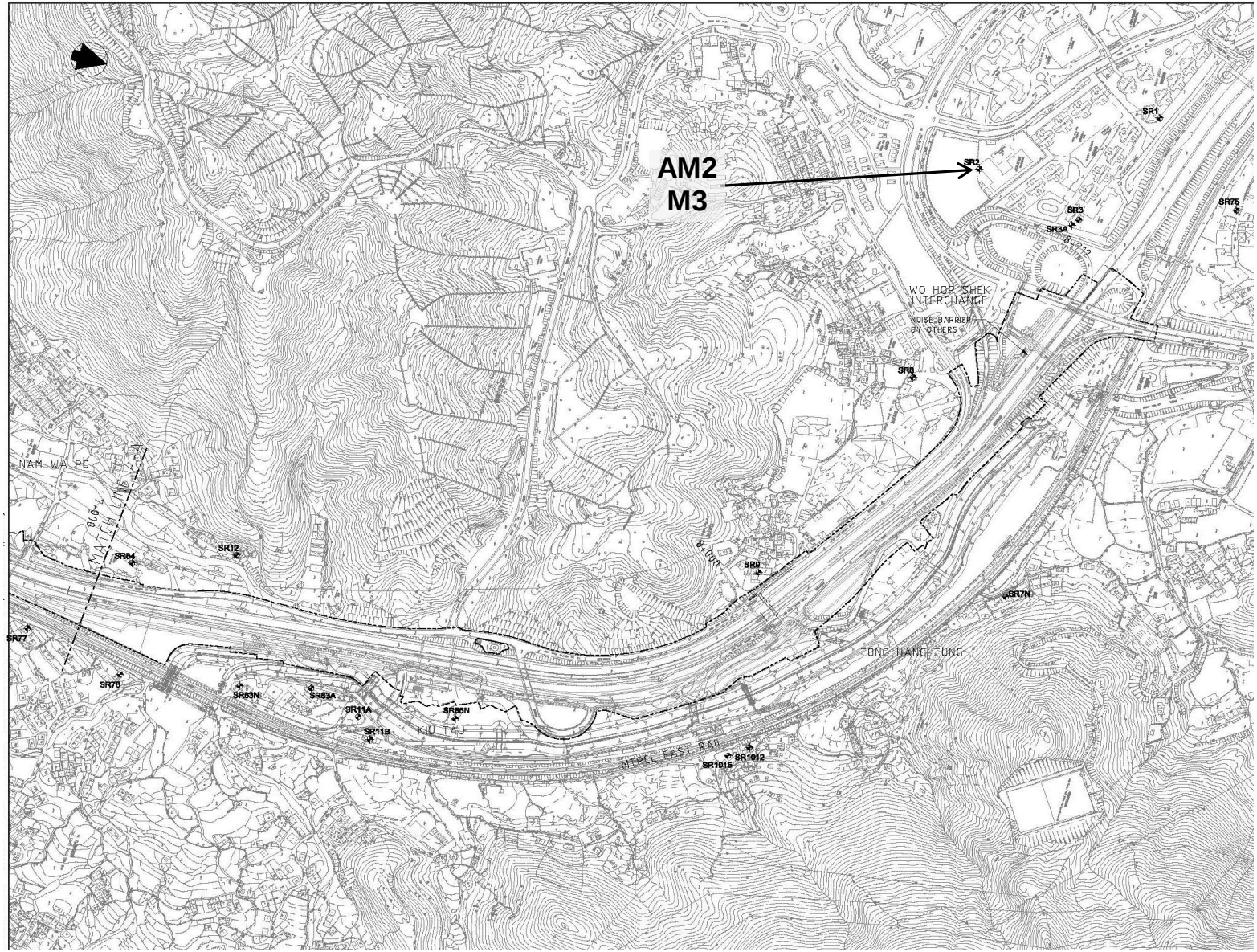
PROVISION OF BUS-BUS INTERCHANGE ON FANLING HIGHWAY KOWLOON BOUND

AECOM

Layout Plan

Date: Apr 2017

Figure 1.2



CONTRACT NO. HY/2012/06

WIDENING OF FANLING HIGHWAY

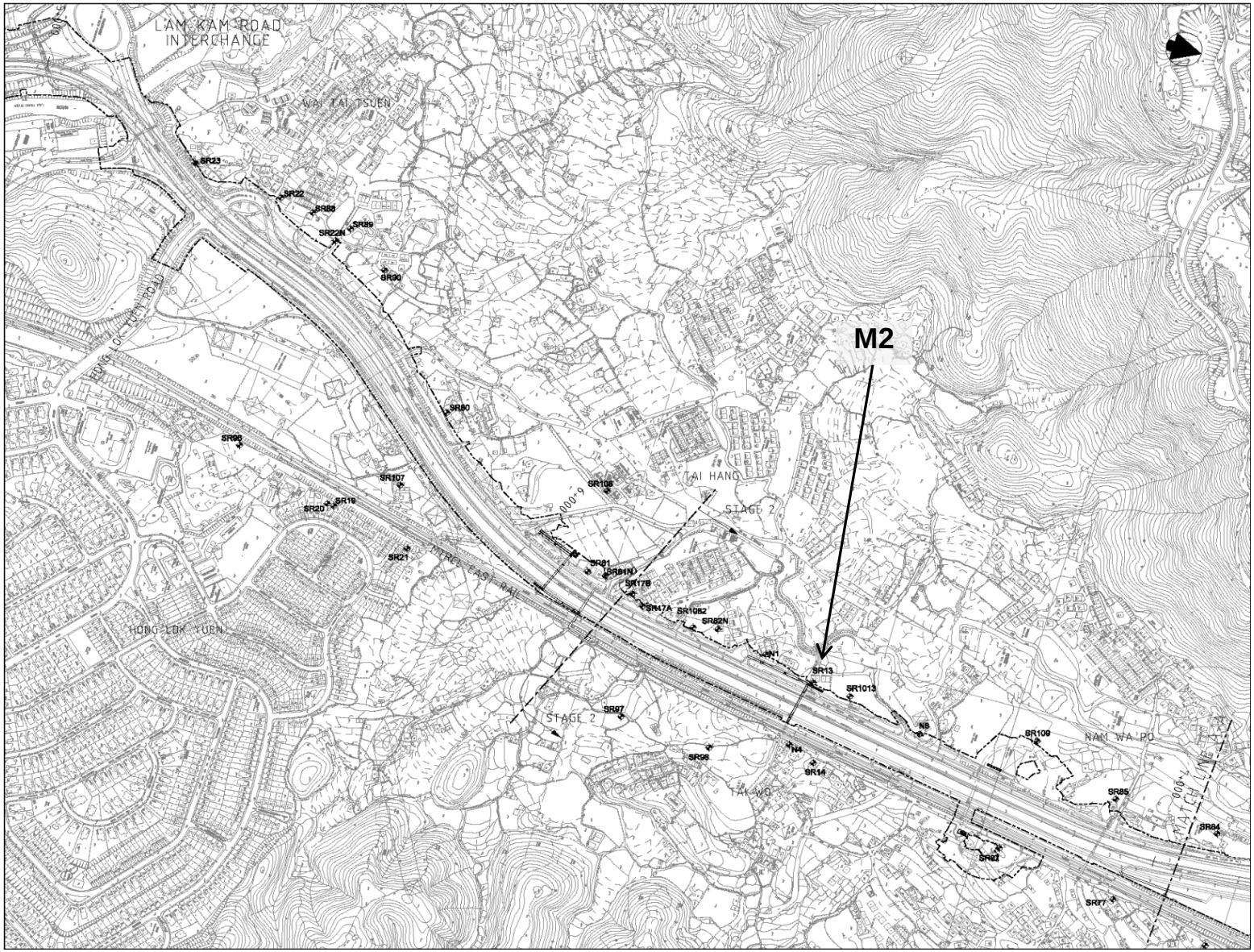
- TAI HANG TO WO HOP SHEK INTERCHANGE

AECOM

Locations of Monitoring Station

Date: Dec 2013

Figure 1.3a



CONTRACT NO. HY/2012/06

WIDENING OF FANLING HIGHWAY

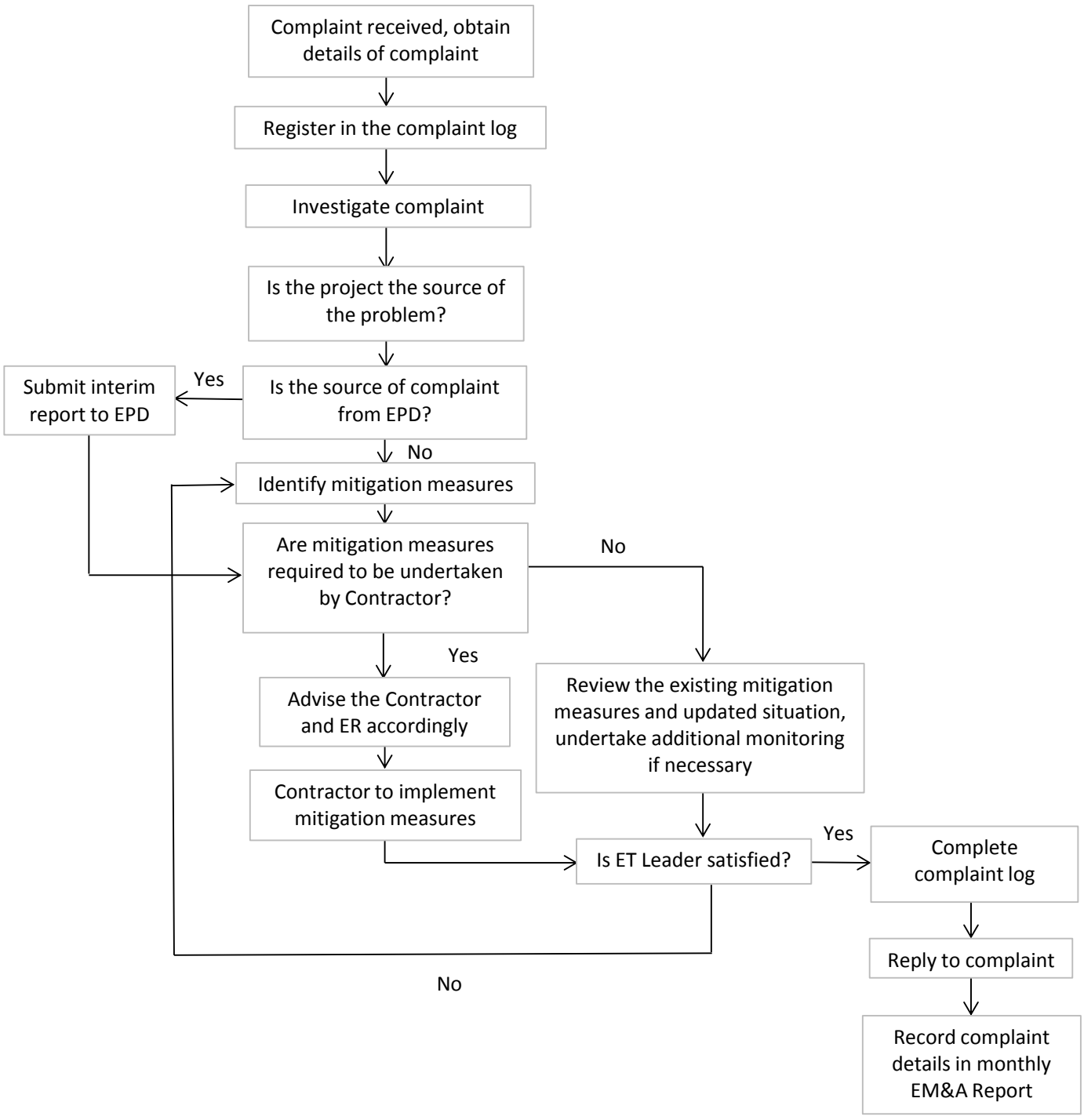
- TAI HANG TO WO HOP SHEK INTERCHANGE

AECOM

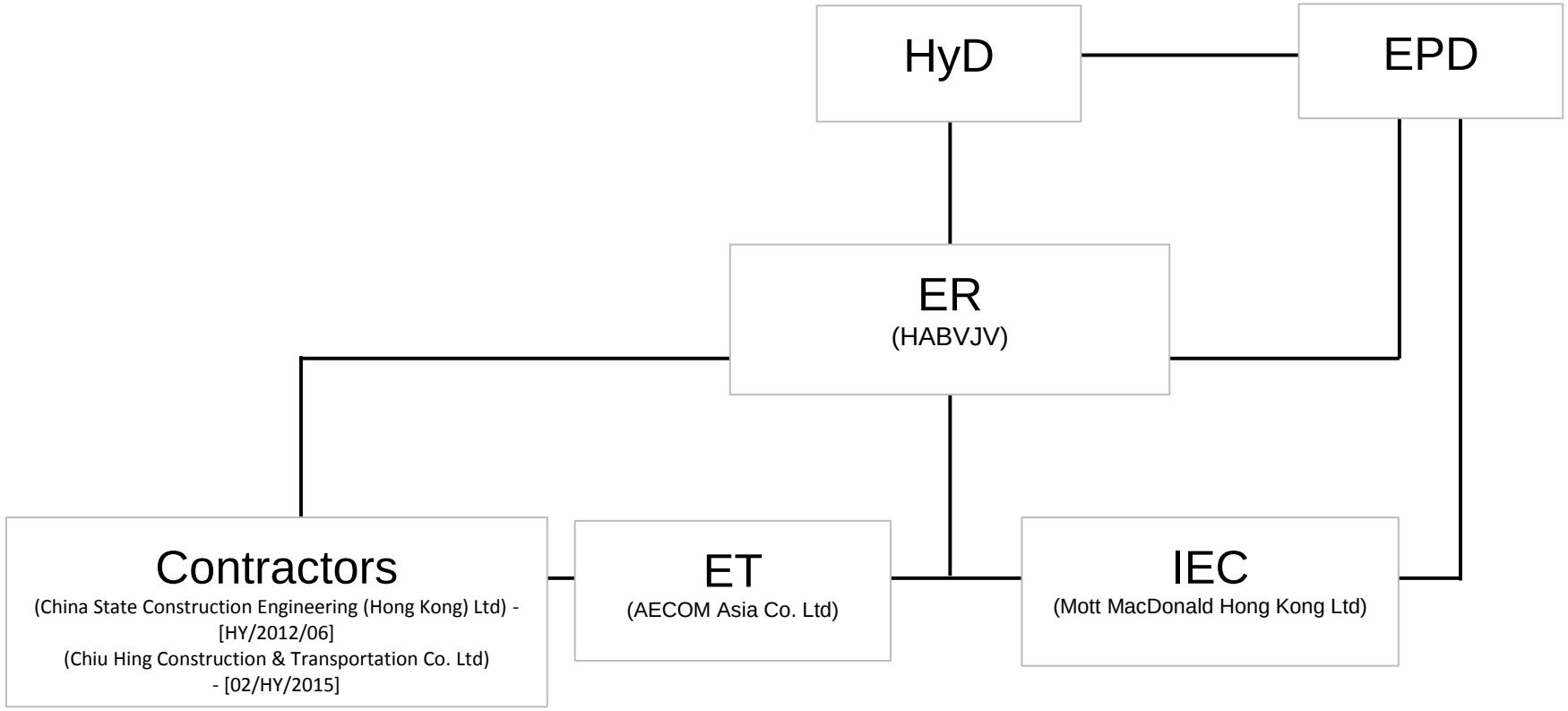
Locations of Monitoring Station

Date: Dec 2013

Figure 1.3b



APPENDIX A
PROJECT ORGANIZATION STRUCTURE



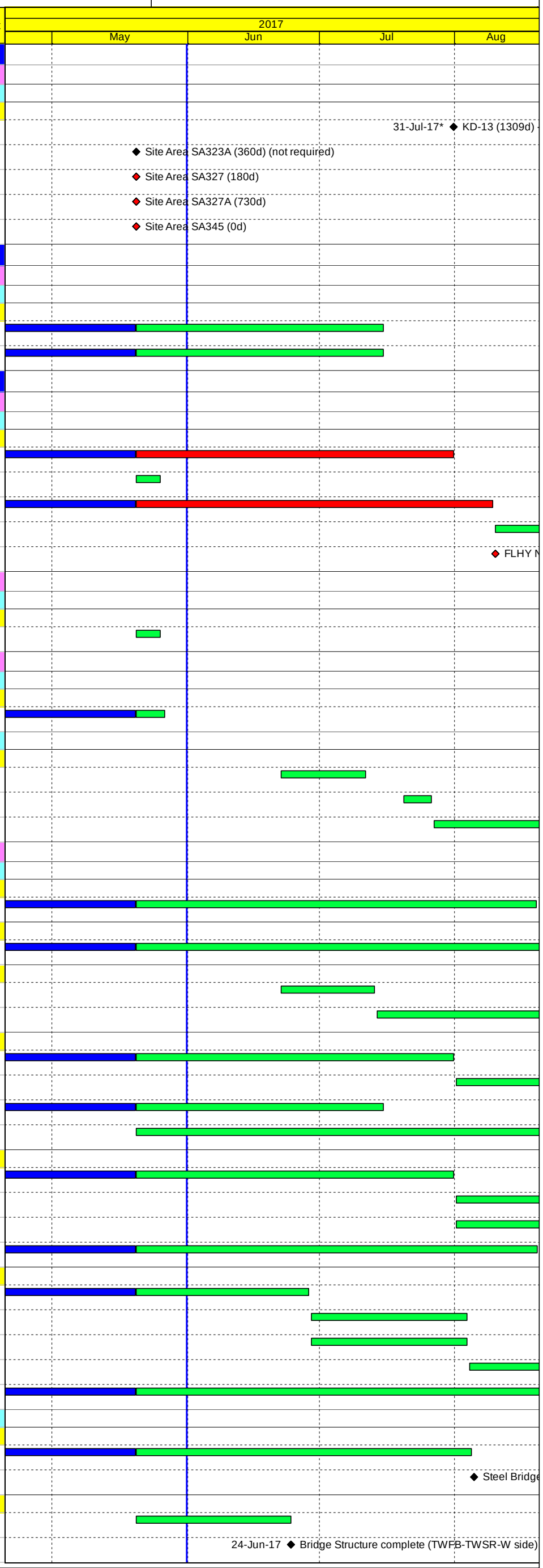
CONTRACT NO. HY/2012/06
WIDENING OF FANLING HIGHWAY
- TAI HANG TO WO HOP SHEK INTERCHANGE

AECOM

Project Organization Structure

APPENDIX B
CONSTRUCTION PROGRAMMES

Activity ID	Activity Name	Dur. % Complete	Rem. Duration	Original Duration	Start	Finish	Total Float
Contract Condition							
General							
Contract Condition							
Contract Condition							
KD13	KD-13 (1309d) -S3: Connection of realigned Tai Wo Service Road	0%	0	0		31-Jul-17*	35
POSSA323A	Site Area SA323A (360d) (not required)	0%	0	0	20-May-17		1146
POSSA327	Site Area SA327 (180d)	0%	0	0	20-May-17*		-870
POSSA327A	Site Area SA327A (730d)	0%	0	0	20-May-17*		-672
POSSA345	Site Area SA345 (0d)	0%	0	0	20-May-17*		-537
ZONE 1 (Ch. 5640 to 5880)							
Noise Barrier Along Fanling Highway N/B							
Site Clearance & Demolition of Existing Structure							
Underground Utility Works							
ADVZ20180	Utility cable changeover period (NWT)	72.46%	57	207	21-Dec-16 A	15-Jul-17	184
ADVZ20182	Additional Utilitly cable changeover period (PCCW, HCG)	72.6%	57	208	20-Dec-16 A	15-Jul-17	184
ZONE 2 (Ch. 5880 to 6930)							
General							
DRM Proposal							
DRM Proposal							
ADVZ20200	Utility cable changeover period (All Utility Companies)(9 months)	74.39%	73	285	20-Oct-16 A	31-Jul-17*	0
ADVZ20225	Divert Existing TWSR-W to New TWSR-W	0%	5	5	20-May-17	25-May-17	143
ADVZ20230	Construct Temp Road at NB at North bound (0.5 HS+Lane 1 & 2)	32%	68	100	08-Apr-17 A	09-Aug-17	0
ADVZ20240	Remove Existing Central Barrier at FLHY & Temp Road	0%	75	75	10-Aug-17	08-Nov-17	172
ADVZ20250	FLHY N/B Lane 4 ready to Start	0%	0	0	10-Aug-17		0
Noise Barrier Along TWSR-West and Laying New Utilities							
NB54A (Ch.6290-6350)-TWSR West Side							
Noise Barrier Works							
NB00790	NB54A - NB post & panel installation	0%	5	5	20-May-17	25-May-17	574
Noise Barrier Along Fanling Highway N/B							
Site Clearance & Demolition of Existing Structure							
General							
ADVZ20160	TTA for NB works	90%	6	60	20-Apr-17 A	26-May-17	192
NB60 (Ch.6450-6920)-FH N/B Side							
Noise Barrier Works							
NB01753	NB60 (0-15m)(NB60/1, 0.19m -10nos) Piling	0%	16	16	22-Jun-17	11-Jul-17	42
NB01755	NB60-1 (0-15m) - Sheet piling & Excavation	0%	6	6	20-Jul-17	26-Jul-17	35
NB01757	NB60-1 (0-15m) - Footing & Wall Structure	0%	24	24	27-Jul-17	23-Aug-17	35
Bridge Construction							
New Tai Hang Footbridge							
General							
THBF0370	Steel Staircase & Bridge prefabrication (THFB-TWSR-E side)	55.49%	77	173	20-Jul-16 A	19-Aug-17	231
TWSR-West/ FL Highway N/B Side Section							
THBF0620	Finishes Work	0%	113	60	27-Feb-17 A	30-Sep-17	285
Crossing Fanling Highway Section							
THBF0540	THP1 - Pre-bored H pile (6 nos)	0%	18	18	22-Jun-17	13-Jul-17	149
THBF0560	THP1 - Pile cap, Pier and Pier Head	0%	90	90	14-Jul-17	30-Oct-17	149
TWSR-East FL Highway S/B Side Section							
THBF0470	THAB1 - pile cap & abutment wall	44.95%	60	109	21-Nov-16 A	31-Jul-17	852
THBF0480	THAB1 - Backfilling (~3m)	0%	20	20	01-Aug-17	23-Aug-17	852
THBF0520	THP2 - Pile cap, Pier and Pier Head	0%	47	45	20-Mar-17 A	15-Jul-17	237
THBF0780	Modified existing column head of existing footbridge	0%	101	101	20-May-17	16-Sep-17	177
Lift at TWSR-W Side							
L1520	Lift shaft & roof	73.68%	60	228	16-Jul-16 A	31-Jul-17	218
L1530	Structural Laminated glass wall installation	0%	30	30	01-Aug-17	04-Sep-17	260
L1540	RC Platform connect to bridge	0%	30	30	01-Aug-17	04-Sep-17	218
L1600	CLP Power available (by CLP)	78.35%	92	425	21-Jun-16 A	19-Aug-17	424
Lift at FLHY S/B							
L1370	Lift shaft & roof	78.57%	33	154	20-Sep-16 A	28-Jun-17	151
L1380	Structural Laminated glass wall installation	0%	30	30	29-Jun-17	03-Aug-17	181
L1390	RC Platform connect to bridge (THSC-2 & TH-P2)	0%	30	30	29-Jun-17	03-Aug-17	151
L1400	Roof cover for RC Platform	0%	30	30	04-Aug-17	07-Sep-17	151
L1450	CLP Power available (by CLP)	71.06%	123	425	21-Jun-16 A	19-Sep-17	263
New Tai Wo Footbridge							
General							
TWFB1090	Steel Bridge prefabrication (TWFB)	65.59%	64	186	15-Aug-16 A	04-Aug-17	365
TWFB1100	Steel Bridge available on site (TWFB)	0%	0	0	05-Aug-17		365
TWSR-West/ FL Highway N/B Side Section							
TWFB1390	Finishes Work	0%	30	30	20-May-17	24-Jun-17	535
TWFB1400	Bridge Structure complete (TWFB-TWSR-W side)	0%	0	0		24-Jun-17	535



Remaining Level of Effort
Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
Crit. Milestone

Project ID:WP Rev 04 (1705)

Layout: 3 Month Rolling Program

Page 1 of 5

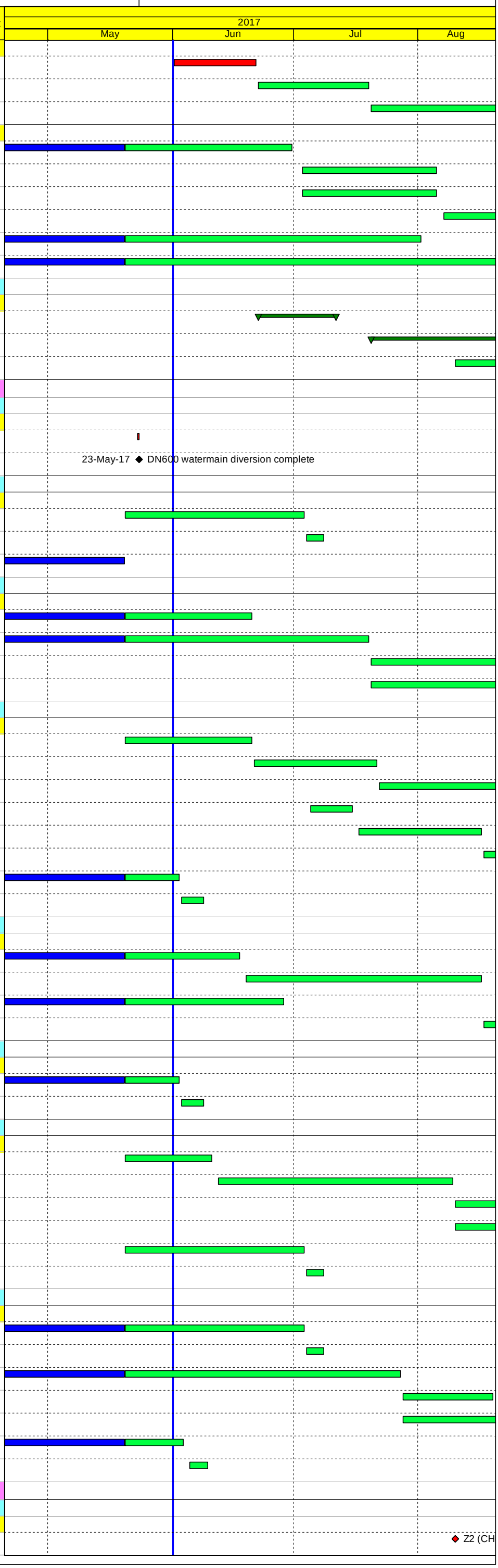
Contract No. HY/2012/06

Widening of Fanling Highway - Tai Hang to Wo Hop Shek Interchange

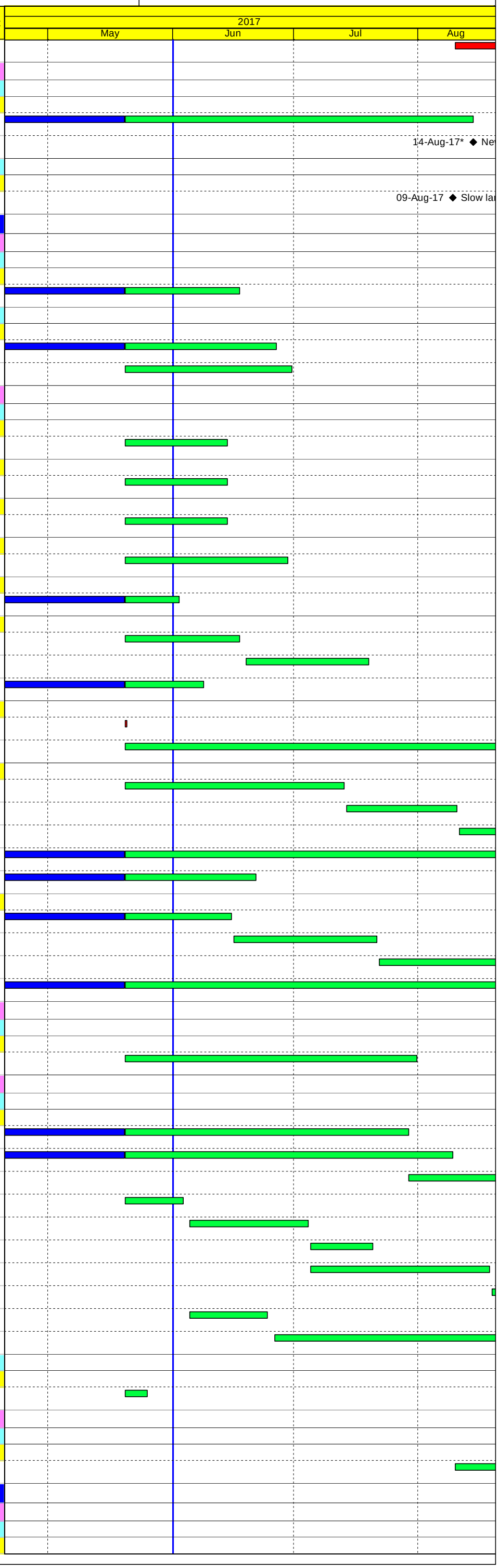
3 Month Rolling Program(20-May-17)

Date	Revision	C...	A..
13-May-14	WP Rev 1		
30-Jun-14	WP Rev 1A		
28-Aug-15	WP Rev 2		
07-Apr-16	WP Rev 3		
08-Nov-16	WP Rev 4		

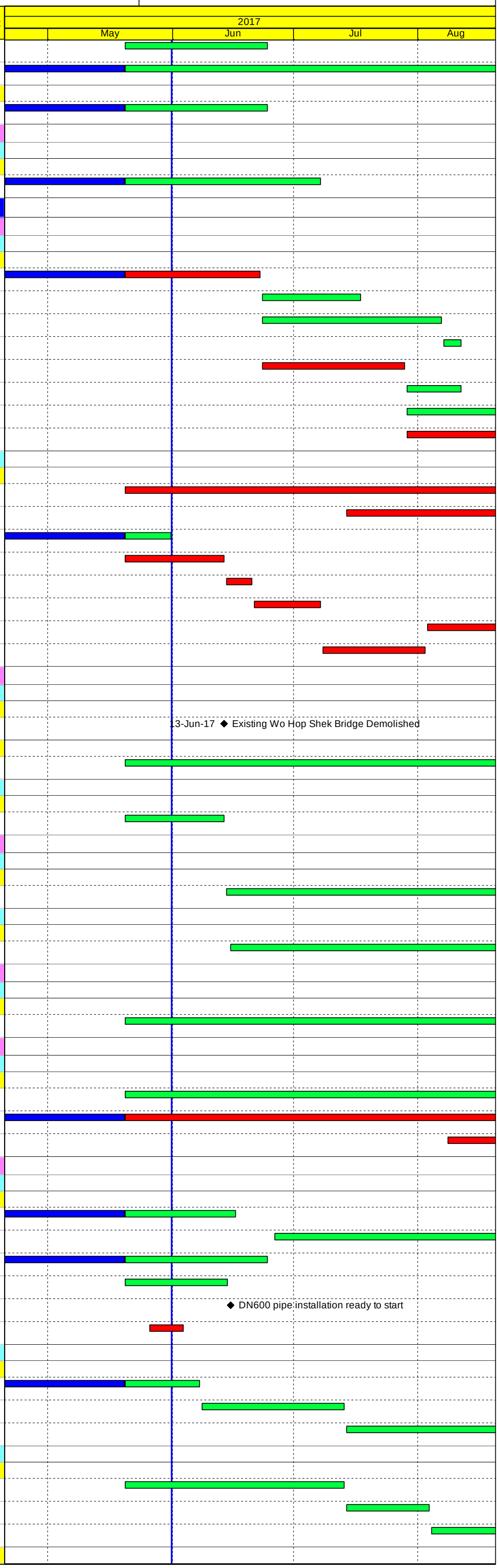
Activity ID	Activity Name	Dur. % Complete	Rem. Duration	Original Duration	Start	Finish	Total Float
Crossing Fanling Highway Section							
TWFB1420	TWP2 - Pre-bored H pile (6 nos)	0%	18	18	01-Jun-17*	21-Jun-17	0
TWFB1430	TWP2 - Pile Test	0%	28	28	22-Jun-17	19-Jul-17	41
TWFB1440	TWP2 - Pile cap	0%	30	30	20-Jul-17	23-Aug-17	68
Lift at TWSR-W Side							
L1670	Lift shaft & roof	84.78%	35	230	21-Jun-16 A	30-Jun-17	350
L1680	Structural Laminated glass wall installation	0%	30	30	03-Jul-17	05-Aug-17	393
L1690	RC Link slab connect to bridge	0%	30	30	03-Jul-17	05-Aug-17	350
L1700	Metal cover on RC platform	0%	30	30	07-Aug-17	09-Sep-17	350
L1730	Lift submission & ordering period	79.25%	61	294	02-Jul-16 A	01-Aug-17	397
L1780	CLP Power available (by CLP)	61.52%	152	395	20-Aug-16 A	18-Oct-17	496
Temporary Tai Wo Footbridge							
Construction Works							
TWFB-T1072	Piling work for NB60 bay 1 (0.19m -10no)	0%	16	16	22-Jun-17	11-Jul-17	42
TWFB-T1074	NB60 bay 1 footing	0%	30	30	20-Jul-17	23-Aug-17	35
TWFB-T1208	Erect Temp Column & link bridge to existing bridge at FLHY S/B	0%	90	90	10-Aug-17	25-Nov-17	38
Noise Barrier Along Fanling Highway S/B							
NB46A (Ch.5880-5935)-FH S/B Side							
Noise Barrier Works							
NB03300	DN600 water connection by WSD	0%	1	1	23-May-17*	23-May-17	0
NB03310	DN600 watermain diversion complete	0%	0	0		23-May-17	440
NB51 (Ch.5935-6055)-FH S/B Side							
Noise Barrier Works							
NB02300	NB51 ID1-3 (0-25m) - NB production	0%	45	45	20-May-17	03-Jul-17	661
NB02310	NB51 ID1-3 (0-25m) - NB post & panel installation	0%	5	5	04-Jul-17	08-Jul-17	538
NB02330	NB51(25-118m) - Footing & Wall Structure	50%	45	90	13-Mar-17 A	12-Mar-18	150
NB52 (Ch.6055-6125) -FH S/B Side (MTRC I&P Area)							
Noise Barrier Works							
NB02370	NB52 - Sheet piling & Excavation	75.93%	26	108	04-Nov-16 A	20-Jun-17	498
NB02380	NB52 - Footing & Wall Structure	58.33%	50	120	18-Nov-16 A	19-Jul-17	474
NB02390	NB52- backfilling	0%	50	50	20-Jul-17	15-Sep-17	474
NB02400	NB52 - NB production	0%	45	45	20-Jul-17	02-Sep-17	600
NB53 (Ch.6125-6300) -FH S/B Side (MTRC I&P Area)							
Noise Barrier Works							
NB02430	Precautionary Measure installation	0%	26	26	20-May-17	20-Jun-17	380
NB02440	NB53 (0-100m) - Sheet piling & Excavation	0%	26	26	21-Jun-17	21-Jul-17	427
NB02450	NB53 (0-100m) - Footing & Wall Structure	0%	60	60	22-Jul-17	29-Sep-17	427
NB02490	NB53 ID2-3 (100-125m), 18nos Predrilling	0%	10	10	05-Jul-17	15-Jul-17	369
NB02500	NB53 ID2-3 (100-125m) 18nos Piling- 1 rigs	0%	27	27	17-Jul-17	16-Aug-17	369
NB02510	NB53 ID2-3 (100-125m) - Sheet piling & Excavation	0%	21	21	17-Aug-17	09-Sep-17	369
NB02590	NB53 (125-180m) - NB production	95.17%	14	290	20-May-16 A	02-Jun-17	692
NB02600	NB53 (125-180m) - NB post & panel installation	0%	5	5	03-Jun-17	08-Jun-17	563
NB55 (Ch.6300-6360)-FH S/B Side (MTRC I&P Area)							
Noise Barrier Works							
NB02640	NB55 - Footing & Wall Structure	96.51%	24	688	07-Nov-14 A	17-Jun-17	369
NB02650	NB55- backfilling	0%	50	50	19-Jun-17	16-Aug-17	369
NB02660	NB55 - NB production	90.95%	40	442	15-Jan-16 A	28-Jun-17	666
NB02670	NB55 - NB post & panel installation	0%	5	5	17-Aug-17	22-Aug-17	500
NB56 (Ch.6360-6400)-FH S/B Side (MTRC I&P Area)							
Noise Barrier Works							
NB02730	NB56 - NB production	96.32%	14	380	20-Feb-16 A	02-Jun-17	692
NB02740	NB56 - NB post & panel installation	0%	5	5	03-Jun-17	08-Jun-17	563
NB61 (Ch.6400-6560)-FH S/B Side (MTRC I&P Area)							
Noise Barrier Works							
NB02770	NB61 (0-50m) - Sheet piling & Excavation	0%	18	18	20-May-17	10-Jun-17	38
NB02780	NB61 (0-50m) - Footing & Wall Structure	0%	50	50	12-Jun-17	09-Aug-17	38
NB02790	NB61 (0-50m)- backfilling	0%	50	50	10-Aug-17	09-Oct-17	461
NB02800	NB61 (0-50m) - NB production	0%	45	45	10-Aug-17	23-Sep-17	579
NB02850	NB61 (50-160m) - NB production	0%	45	45	20-May-17	03-Jul-17	661
NB02860	NB61 (50-160m) - NB post & panel installation	0%	5	5	04-Jul-17	08-Jul-17	538
NB61A (Ch.6560-6745)-FH S/B Side (MTRC I&P Area)							
Noise Barrier Works							
NB02920	NB61A (0-50m) - NB production	89.05%	45	411	20-Feb-16 A	03-Jul-17	661
NB02930	NB61A (0-50m) - NB post & panel installation	0%	5	5	04-Jul-17	08-Jul-17	538
NB02970	NB61A ID2-3 (50-75m) - Footing & Wall Structure	90.61%	57	607	01-Apr-15 A	27-Jul-17	482
NB02980	NB61A ID2-3 (50-75m)- backfilling	0%	20	20	28-Jul-17	19-Aug-17	497
NB02990	NB61A ID2-3 (50-75m) - NB production	0%	45	45	28-Jul-17	10-Sep-17	592
NB03040	NB61A (75-190m) - NB production	96.06%	15	381	20-Feb-16 A	03-Jun-17	691
NB03050	NB61A (75-190m) - NB post & panel installation	0%	5	5	05-Jun-17	09-Jun-17	562
Fanling Highway Construction							
Drainage & Road Works							
Ch 5880-6740							
RDZ41190	Z2 (CH5880-6740) : Fanling Highway Road works Start	0%	0	0	10-Aug-17		0



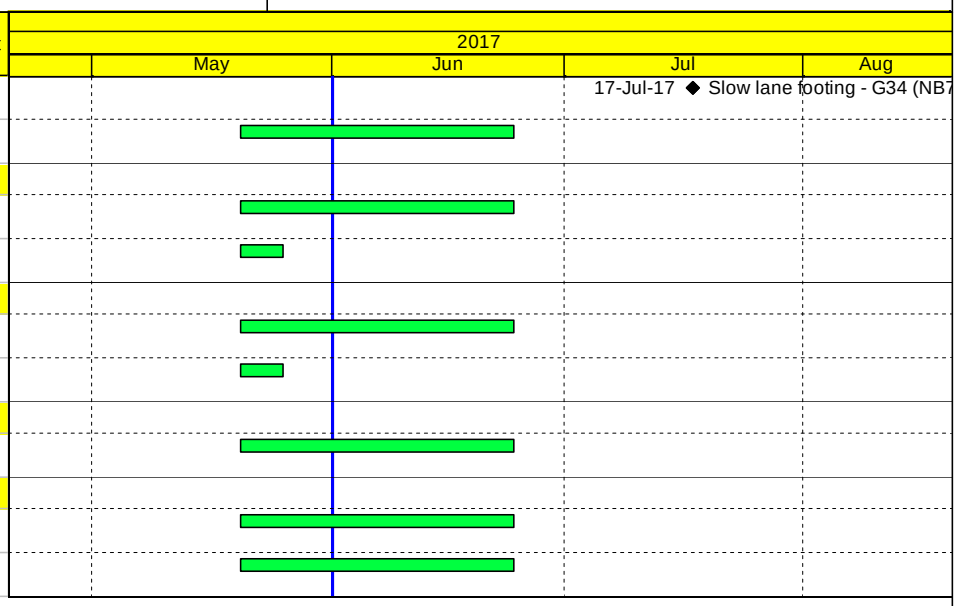
Activity ID	Activity Name	Dur. % Complete	Rem. Duration	Original Duration	Start	Finish	Total Float
RDZ41230	Z2 (CH5880-6740) : Fanling Highway N/B - D&R works (lane 4)	0%	40	40	10-Aug-17	25-Sep-17	0
Other Works							
Site Clearance & Demolition of Existing Structure							
Contract Condition							
MCLT1090	New MCLT - finishes works	77.5%	72	320	20-May-16 A	14-Aug-17	507
MCLT1100	New MCLT completion	0%	0	0		14-Aug-17	507
TCSS Works							
G54							
TCSS1500	Slow lane footing - G54 (NB61)	0%	0	0		09-Aug-17	481
South Buffer Zone 1 (SBZ1) (within Zone 2)(Ch.6740 to 6930)							
Noise Barrier Along TWSR-West and Laying New Utilities							
NB63A (Ch.6710-6840)-TWSR West Side							
Noise Barrier Works							
NB01200	NB63A-3 - NB post installation	83.45%	24	145	17-Sep-16 A	17-Jun-17	555
NB64 & NB64A (Ch.6860-6920)-TWSR West Side							
Noise Barrier Works							
NB001060	NB64 & NB64A -NB post & panel installation	89.8%	31	304	14-Mar-16 A	26-Jun-17	548
NB003060	NB64A -Footing & Wall Structure - 1 bays	0%	35	35	20-May-17	30-Jun-17	544
Bridge Construction							
Kau Lung Hang Vehicular Bridge							
KLH Bridge - West Ramp							
KLH.1290	West Ramp - Planting	0%	21	21	20-May-17	14-Jun-17	558
KLH Bridge - Deck 1							
KLH.3430	Deck 1 - Planting	0%	21	21	20-May-17	14-Jun-17	558
KLH Bridge - Deck 3							
KLH.3500	Deck 3 - Planting	0%	21	21	20-May-17	14-Jun-17	590
KLH Bridge - East Ramp							
KLH.3590	East Ramp - Planting	0%	34	34	20-May-17	29-Jun-17	898
KLH Bridge - Ramp R1							
Z2.KLH.3610	Ramp R1 - Steel roof	80%	11	55	19-Jan-17 A	02-Jun-17	568
KLH Bridge - Ramp R2							
Z2.KLH.1523	VO 028 - Boundary Wall to Hse 190B structure	0%	24	24	20-May-17*	17-Jun-17	529
Z2.KLH.1524	VO 028 - Boundary Wall to Hse 190B E&M, Drainage	0%	26	26	19-Jun-17	19-Jul-17	529
Z2.KLH.1550	Ramp R2 - Steel roof	33.33%	16	24	14-Mar-17 A	08-Jun-17	563
Bridge Road Work							
Z2.KLH.2030	Diversion of existing pedestrian to proposed Kiu Lung Hang Vehicular	0%	1	1	20-May-17*	20-May-17	-22
Z2.KLH.2040	Landscape work of KLHVB	0%	120	120	20-May-17	11-Oct-17	459
Lift at TWSR-W Side							
L01040	Temp work & Pile cap	0%	45	45	20-May-17	13-Jul-17	339
L01050	Lift pit	0%	24	24	14-Jul-17	10-Aug-17	339
L01060	Lift shaft & roof	0%	52	52	11-Aug-17	12-Oct-17	339
L01094	Lift submission & ordering period	68.34%	107	338	01-Aug-16 A	23-Sep-17	383
L01140	CLP Power available (by CLP)	92.55%	33	443	04-Apr-16 A	21-Jun-17	653
Lift at FLHY S/B							
L01200	Temp work & Pier cap	51.11%	22	45	10-Mar-17 A	15-Jun-17	347
L01210	Lift pit	0%	30	30	16-Jun-17	21-Jul-17	347
L01220	Lift shaft & roof	0%	90	90	22-Jul-17	07-Nov-17	347
L01300	CLP Power available (by CLP)	80.17%	94	474	04-Apr-16 A	21-Aug-17	598
TWSR-West Construction							
Drainage & Road Works							
General							
RDZ20130	Z2: S3: Connection of realigned TWSR-W at interface Zone 2 & 3	0%	60	60	20-May-17	31-Jul-17	30
Noise Barrier Along Fanling Highway S/B							
NB62 (Ch.6745-6910)-FH S/B Side (MTRC I&P Area)							
Noise Barrier Works							
NB03090	NB62 (0-80m) - Footing & Wall Structure	25.32%	59	79	12-Dec-16 A	29-Jul-17	480
NB03100	NB62 (0-80m) - backfilling	0%	68	20	27-Mar-17 A	09-Aug-17	506
NB03110	NB62 (0-80m) - NB production	0%	45	45	29-Jul-17	12-Sep-17	590
NB03130	NB62 (80-110m) Under bridge - Sheet piling & Excavation	0%	12	12	20-May-17*	03-Jun-17	449
NB03140	NB62 (80-110m) Under bridge - Footing & Wall Structure	0%	25	25	05-Jun-17	04-Jul-17	502
NB03150	NB62 (80-110m) Under bridge - backfilling	0%	14	14	05-Jul-17	20-Jul-17	523
NB03160	NB62 (80-110m) Under bridge - NB production	0%	45	45	05-Jul-17	18-Aug-17	615
NB03170	NB62 (80-110m) Under bridge - NB post & panel installation	0%	5	5	19-Aug-17	24-Aug-17	498
NB03180	NB62 (110-170m) - Sheet piling & Excavation	0%	18	18	05-Jun-17	24-Jun-17	449
NB03190	NB62 (110-170m) - Footing & Wall Structure	0%	60	60	26-Jun-17	04-Sep-17	449
NB70 (Ch.6910-6930)-FH S/B Side							
Noise Barrier Works							
NB03290	NB70- NB post & panel installation	0%	5	5	20-May-17	25-May-17	574
Fanling Highway Construction							
Drainage & Road Works							
Ch 6740-6930							
RDZ20470	Z2 (CH6740-6930) : Fanling Highway N/B - D&R works (lane 4)	0%	24	24	10-Aug-17	06-Sep-17	76
North Buffer Zone 2 (NBZ2) (within Zone 4) (Ch. 7925 to 8100)							
Bridge Construction							
New Ho Ka Yuen Footbridge							
TWSR-West/ FL Highway N/B Side Section							



Activity ID	Activity Name	Dur. % Complete	Rem. Duration	Original Duration	Start	Finish	Total Float
HKY1273	Erect Staircase (HKY-TWSR-W side)	0%	30	30	20-May-17	24-Jun-17	581
HKY1440	Remaining Finishes works of HKYFB	45.03%	83	151	21-Nov-16 A	26-Aug-17	483
TWSR-East FL Highway S/B Side Section							
HKY1870	Steel Ramp finishes work (HKYFB-TWSR-E side)	77.1%	30	131	13-Oct-16 A	24-Jun-17	581
Other Works							
Slope Works							
TWSR-East FL Highway S/B Side Section							
S1000	Slope S51-Fill ~3m	0%	40	40	20-Apr-17 A	07-Jul-17	535
ZONE 4 (Ch. 7925 to 8700)							
Noise Barrier Along Fanling Highway N/B							
NB75 (Ch.7930-8090)-FH N/B Side							
Noise Barrier Works							
NB4060	NB75 - Footing & Wall Structure (Ch7930-7990)	53.33%	28	60	20-Mar-17 A	22-Jun-17	0
NB4070	NB75 - backfilling (Ch7930-7990)	0%	20	20	23-Jun-17	17-Jul-17	90
NB4080	NB75 - NB production (Ch7930-7990)	0%	45	45	23-Jun-17	06-Aug-17	162
NB4090	NB75 - NB post & panel installation (Ch7930-7990)	0%	5	5	07-Aug-17	11-Aug-17	133
NB4120	NB75 - Footing & Wall Structure (Ch7990-8000) & G34	0%	30	30	23-Jun-17	28-Jul-17	0
NB4130	NB75 - backfilling (Ch7990-8000)	0%	12	12	29-Jul-17	11-Aug-17	108
NB4140	NB75 - NB production (Ch7990-8000)	0%	45	45	29-Jul-17	11-Sep-17	132
NB4180	NB75 - Footing & Wall Structure (Ch8000-8050)	0%	50	50	29-Jul-17	25-Sep-17	0
NB77 (Ch.8090-8450)-FH N/B Side							
Noise Barrier Works							
NB4310	NB77 - Footing & Wall Structure (Ch8090-8190)	0%	90	90	20-May-17	04-Sep-17	8
NB4370	NB77 - Footing & Wall Structure (Ch8190-8290)	0%	90	90	14-Jul-17	30-Oct-17	8
NB4420	NB77 - piling (NB77/18-26, 0.19m -36no)	65.38%	9	26	08-Apr-17 A	31-May-17	24
NB4470	NB77 -Pre-drilling (Ch8390-8450)& G35	0%	20	20	20-May-17 A	13-Jun-17	7
NB4475	NB77 - piling (NB77/27 - 28, 0.19m -8no)	0%	6	6	14-Jun-17	20-Jun-17	7
NB4480	NB77 - piling (NB77/29 - 30, 0.19m -24no)	0%	14	14	21-Jun-17	07-Jul-17	7
NB4482	NB77 - Footing & Wall Structure (NB77/27 - 30) (Ch8390-8450)	0%	75	75	03-Aug-17	01-Nov-17	7
NB4485	NB77 - piling (NB77/31 - 32, 0.19m -14no) & G35 (8nos)	0%	22	22	08-Jul-17	02-Aug-17	7
Bridge Construction							
New Wo Hop Shek Pedstrian & Cycle Bridge							
General							
WHS1140	Existing Wo Hop Shek Bridge Demolished	0%	0	0		13-Jun-17	545
TWSR-West/ FL Highway N/B Side Section							
WHS1380	WHSAB2, P8, P9 - pile cap & abutment wall	0%	90	90	20-May-17	04-Sep-17	279
Demolition of Existing Wo Hop Shek Pedstrian & Cycle Bridge							
TWSR-East FL Highway S/B Side Section							
WHS1840	Demolish existing WHS Footbridge abutment wall at W77A (Pending for	0%	20	20	20-May-17	13-Jun-17	69
Slip Road Y Construction							
Drainage & Road Works							
TWSR-East FL Highway S/B Side Section							
RDZ41060	Construct Slip Rd Y - 1st Lane (Ch8370-8650)(SA340) (Z4	0%	100	100	14-Jun-17	11-Oct-17	69
Underground Utility Works							
DN600 and DN900 Watermain							
DN1070	DN600 watermain laying (Ch8400 - 8600) (W77A to	0%	110	110	15-Jun-17	24-Oct-17	480
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-May-17	16-Nov-17	311
Fanling Highway Construction							
Drainage & Road Works							
TWSR-East FL Highway S/B Side Section							
RDZ41086	Construct FH S/B Lane 1 & 2 (Ch7925-8000)(SA346) (after HKY	0%	145	145	20-May-17	10-Nov-17	123
RDZ41121	Drainage work at central divider (at NBZ2)	36%	96	150	01-Feb-17 A	11-Sep-17	2
RDZ41131	Drainage work at central divider (Ch8100-8600)	0%	150	150	08-Aug-17	05-Feb-18	2
Other Works							
Retaining Wall W77A							
TWSR-East FL Highway S/B Side Section							
RWZ4.1080	Base slab & Wall (3-7m high)-RW77A (Ch.0-20)	34.29%	23	35	01-Apr-17 A	16-Jun-17	136
RWZ4.1090	Backfilling (3-7m high) - RW77A (Ch.0-20)	0%	50	50	26-Jun-17	23-Aug-17	109
RWZ4.1150	Backfilling (0-3m) - RW77A (Ch.92-120)	28.57%	30	42	01-Feb-17 A	24-Jun-17	109
RWZ4.1170	Base slab & Wall (0-3m high)-RW77A last 1 bay at CH120	0%	21	21	20-May-17	14-Jun-17	138
RWZ4.1180	DN600 pipe installation ready to start	0%	0	0	15-Jun-17		480
RWZ4.1190	Temporary diversion of existing watermain under new slip road Y	0%	7	7	26-May-17*	03-Jun-17	0
Retaining Wall W77B							
TWSR-East FL Highway S/B Side Section							
RWZ4.1100	Base slab & Wall (0-3m high)-RW77B (Ch 0-23)	73.68%	15	57	20-Jan-17 A	07-Jun-17	109
RWZ4.1110	Backfilling (0-3m) - RW77B (Ch 0-23)	0%	30	30	08-Jun-17	13-Jul-17	109
RWZ4.1130	Backfilling (3-4m high) - RW77B (Ch.23-75)	0%	35	35	14-Jul-17	23-Aug-17	109
TCSS Works							
TCSS Pre-Construction Works							
TCSS0120	Prepare Shop Drawing-TCSS	0%	45	45	20-May-17	13-Jul-17	87
TCSS0130	Shop Drawing Comment & Approval	0%	21	21	14-Jul-17	03-Aug-17	104
TCSS0140	Revised & Re-submission TCSS shop Drawing	0%	18	18	04-Aug-17	24-Aug-17	86
G34							



Activity ID	Activity Name	Dur. % Complete	Rem. Duration	Original Duration	Start	Finish	Total Float
TCSS1520	Slow lane footing - G34 (NB75)	0%	0	0		17-Jul-17	291
TCSS1530	Fast lane footing - G34 (CH7990, N/B)	0%	30	30	20-May-17	24-Jun-17	309
G35							
TCSS1550	Slip road island footing - G35 (CH8410, N/B)	0%	30	30	20-May-17	24-Jun-17	339
TCSS1560	Fast lane footing - G35 (CH8410, N/B)	0%	5	5	20-May-17	25-May-17	364
DS50							
TCSS1600	Slip road island footing - DS50 (CH7940, S/B)	0%	30	30	20-May-17	24-Jun-17	399
TCSS1610	Fast lane footing - DS50 (CH7940, S/B)	0%	5	5	20-May-17	25-May-17	424
FADS8							
TCSS1630	Fast lane footing - FADS8 (CH8220, S/B)	0%	30	30	20-May-17	24-Jun-17	429
FVMS2 (Deleted by RFI-138, Pending for VO)							
TCSS1640	Slow lane footing - FVMS2 (CH8400, S/B)- Deleted by RFI-138	0%	30	30	20-May-17	24-Jun-17	459
TCSS1650	Fast lane footing - FVMS2 (CH8400, S/B)	0%	30	30	20-May-17	24-Jun-17	459



App A

CHIU HING CONSTRUCTION AND TRANSPORTATION CO. LTD.
Contract No. 02/HY/2015
Works Order Nos: CB128519-0 & CB128520-5
Progarmme of Construction of Noise Barrier and Pedestrian Covered Walkway at Tai Wo Service Road East near Ho Ka Yuen

Rev : 02
22/5/2017

Programmed Duration
Actual Progress
Critical Path Activities
Early Start & Early Finsih

Float = 3 weeks

23/5/17 3-Months Rolling Program 24/8/2017

Act. No	Week Ending	Week No. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
		2/25	3/4	3/11	3/18	3/25	4/1	4/8	4/15	4/22	4/29	5/6	5/13	5/20	5/27	6/3	6/10	6/17	6/24	7/1	7/8	7/15	7/22	7/29	8/5	8/12	8/19	8/26	9/2	9/9	9/16	9/23	9/30	10/7	10/14	10/21	10/28	11/4	11/11	11/18	11/25	12/2	12/9	12/16	12/23	12/30	1/6	1/13	1/20	1/27	2/3	2/10	2/17	2/24	3/3	3/10	3/17	3/24	3/31	4/7	4/14	4/21	4/28	5/5	5/12	5/19	5/26
	WO No. CB128520-5																																																																											
1	Setting out and UU detection				100%																																																																				
2	Submit and obtain approval of temp wks					90%																																																																	
	Construction of Footings (6 stages): *(Assume 2 sections in one stage, 6 weeks cycle per standard section)*									55%																																																															
3	Stage 1 : NB74-6 , NB 74-7															50%																																																															
4	Stage 2 : NB74-5, NB-74- 4																				25%																																																										
5	Stage 3: NB-74-3 , NB-74-2																																																																															
6	Stage 4: NB74-1, Footing A (1 wk allowed for plate load test)																																																																													
7	Stage 5: NB74-8, & Footing B (1 wk allowed for plate load test)																																																																												
8	Stage 6: 74-9, NB74-10																																																																												
9	Submit workshop drawings for steelworks of Noise Barriers and Covered Walkway for approval								ES														EF																																																				
10	Fabrication of NB and CW																																																																															
11	Site installation of NB (include steel posts and panels)																																																																														
	WO No. CB128519-0																																																																														
12	Site installation of Covered Walkway																																																																											
13	Electrical Installation																																																																													
14	Allow for Works by Bus Companies																																																																													
15	Drainage Works																																																																													
16	Footpath Construction																																																																													
17	Cycle Track Modification nr Tai Hang																																																																													
18	Road surfacing																																																																													
19	Allow for UU laying ducts																																																																												
20	Allow for fixing street furnitures by C3/ LT																																																																												

Lunar New Year Holidays

Cycle time for standard section :

Item	Activity	Approx Qty	Days for Construction (Calendar Days)
1	Sheet-piling with struts	24 x 7 = 168M2	10 days
2	Excavation	12 x 6 x 6 =432 M3	7 days
3	Rock Fill (assumed)	12 x 2 = 24 M3	2 days
4	Blinding Layer		1 day
5	Fwk-Rebar- Concreting	110 M 3	10 days **
6	Posts for Covered Walkway		7 days ##
7	Backfilling	290M 3	5 days
			Total = 42 days

** Breakdown of Item 5

	Base Slab calendar days	Stem calendar days
Fwk	1	2
Re-bar	1	3
Concreting	1	1
Remove Fwk		1
Total :	10 days	

Breakdown of Item 6

	Posts calendar days	
Fwk	2	
Re-bar	3	
Concreting	1	
Remove Fwk	1	
Total :	7 days	

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	
			HY/2012/06	02/HY/2015
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	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.		@	V
	All spraying of materials and surfaces shall avoid excessive water usage.		V	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	V
	Materials shall be dampened, if necessary, before transportation.		V	V
	Travelling speeds shall be controlled to reduce traffic induced dust dispersion and re-suspension within the site from the operating haul trucks.		V	V
	Vehicle washing facilities shall be provided to minimize the quantity of material deposited on public roads.		@	@

Noise – Schedule of Recommended Mitigation Measures

Impact	Mitigation Measures	Timing	Implementation Status	
			HY/2012/06	02/HY2015
Noise during construction	Use of silenced plant or plant equipped with mufflers or dampers in substitute of ordinary plant.	During construction	V	V
	Reduce the number of equipment and their percentage on-time.		V	V
	3.5 m and 5.5 m high temporary noise barrier at culvert construction work area (Figure 2a of the Environmental Permit).		V	N.A.
	3 m high temporary noise barrier along the northern edge of Bridge 12 at ground level (Figure 2b of the Environmental Permit).		V	N.A.
	2 m high temporary noise barrier along the northern edge of Bridge 12 at bridge level (Figure 2b of the Environmental Permit).		V	N.A.
	2.5 m high temporary noise barrier along Tai Wo Service Road West (Figure 2c of the Environmental Permit).		V	N.A.
	3.5m and 7m high temporary noise barrier along Tai Wo Services Road West near Tai Hang (Figure 2c of the Environmental Permit).		V	N.A.
	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	N.A.
	7 m high temporary noise barrier near Kiu Tau Footbridge work area (Figure 2d of the Environmental Permit).		V	N.A.
	2.5 m high temporary noise barrier near river diversion work area (Figure 2e of the Environmental Permit).		N.A.	N.A.

Water Quality – Schedule of Recommended Mitigation Measures

Impact	Mitigation Measures	Timing	Implementation Status	
			HY/2012/06	02/HY/2015
Water quality during construction	Demolition and reconstruction of bridges - 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	N.A.
	Road Widening Works, Earthworks and Culvert Extension Works - Wastewater generated from any concrete batching washdown of equipment or similar activities should be discharged into foul sewers, after the removal of settable solids, and pH adjustment as necessary. All sewage discharges from the study area should meet the TM standards and approval from EPD through the licensing process is required. - 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	
			HY/2012/06	02/HY/2015
Waste management during construction	General Waste - 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 - Segregation of materials to facilitate disposal. - Mulching to reduce bulk and where possible review opportunities for the possible beneficial use within landscaping areas.		V	V
	Demolition Wastes - Segregation of materials to facilitate disposal. - Appropriate stockpile management.		V	V
	Excavated Materials - 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	V
	Construction Wastes - 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.		@	V
	Bentonite Slurries - Bentonite slurries should be reused as far as possible. - Disposal in accordance with Practice Note For Professional Persons ProPECC PN 1/94.		#	N.A.

	Chemical Wastes - 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.		@	N.A.
	Municipal Wastes - 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.		V	V

Ecology – Schedule of Recommended Mitigation Measures

Impact	Mitigation Measures	Timing	Implementation Status	
			HY/2012/06	02/HY/2015
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	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	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	
			HY/2012/06	02/HY/2015
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	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	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	N.A.
	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.		#	N.A.
	Protection of Important Landscape Features - Important features such as temples, Island House and kilns within the study area, although remote from the proposed works retained and adequately protected.		#	N.A.

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/m3	500 μg/m3

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

Location	Action Level	Limit Level
AM2	200.7 μg/m3	260 μg/m3

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

TISCH Environmental

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

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - May 31, 2016 Rootsmeter S/N 0438320 Ta (K) - 298
Operator Tisch Orifice I.D. - 0988 Pa (mm) - 754.38

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.3670	3.2	2.00
2	NA	NA	1.00	0.9750	6.4	4.00
3	NA	NA	1.00	0.8700	7.9	5.00
4	NA	NA	1.00	0.8260	8.7	5.50
5	NA	NA	1.00	0.6830	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)		Va	(x axis) Qa	(y axis)
0.9884	0.7230	1.4090		0.9957	0.7284	0.8888
0.9842	1.0094	1.9926		0.9915	1.0170	1.2570
0.9821	1.1289	2.2278		0.9894	1.1373	1.4054
0.9811	1.1878	2.3365		0.9884	1.1967	1.4740
0.9758	1.4288	2.8179		0.9831	1.4394	1.7777
Qstd slope (m) =		1.99349		Qa slope (m) =		1.24829
intercept (b) =		-0.02737		intercept (b) =		-0.01727
coefficient (r) =		0.99988		coefficient (r) =		0.99988
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}

AECOM

Total Suspended Particulates (TSP) Sampler
Field Calibration Report

Station: Fanling Government Secondary School (AM2)
Date: 17-Mar-17
Model No: TE-5170
Equipment No.: A-001-74T

Operator: Shum Kam Yuen
Next Due Date: 17-May-17
Verified Against: O.T.S -- 988
Expiration Date: 31-May-2017

Ambient Condition					
Temperature, Ta	292.0	Kelvin	Pressure, Pa	761.2	mmHg

Orifice Transfer Standard Information					
Equipment No.:	988	Slope, mc	1.99349	Intercept, bc	-0.02737
Last Calibration Date:	31-May-16	$mc \times Qstd + bc = [H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	31-May-17				

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	6.9	2.66	1.35	5.0	2.26
2	5.8	2.43	1.24	4.1	2.05
3	4.5	2.14	1.09	3.2	1.81
4	3.4	1.86	0.95	2.4	1.57
5	2.3	1.53	0.78	1.4	1.20

By Linear Regression of Y on X

Slope , mw = **1.8222** **Intercept, bw =** **-0.1936**

Correlation Coefficient* = **0.9982**

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.21 m^3/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 = $(m \times Qstd + b)^2 \times (760 / Pa) \times (Ta / 298)$ = **3.96**

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

Remarks:

QC Reviewer: WS CHAN Signature: [signature] Date: 17/3/17

AECOM

Total Suspended Particulates (TSP) Sampler
Field Calibration Report

Station: Fanling Government Secondary School (AM2)
Date: 17-May-17
Model No: TE-5170
Equipment No.: A-001-74T

Operator: Shum Kam Yuen
Next Due Date: 17-Jul-17
Verified Against: O.T.S -- 988
Expiration Date: 31-May-2017

Ambient Condition					
Temperature, Ta	300.2	Kelvin	Pressure, Pa	763.2	mmHg

Orifice Transfer Standard Information					
Equipment No.:	988	Slope, mc	1.99349	Intercept, bc	-0.02737
Last Calibration Date:	31-May-16	**mc x Qstd + bc = [H x (Pa/760) x (298/Ta)]$^{1/2}$**			
Next Calibration Date:	31-May-17				

Calibration of TSP Sampler

Calibration Point	H in. of water	[H x (Pa/760) x (298/Ta)]$^{1/2}$	Qstd (m^3/min) **X - axis**	W in. of oil	[ΔW x (Pa/760) x (298/Ta)]$^{1/2}$ **Y-axis**
1	7.0	2.64	1.34	5.1	2.25
2	5.9	2.43	1.23	4.2	2.05
3	4.4	2.09	1.06	3.3	1.81
4	3.3	1.81	0.92	2.2	1.48
5	2.3	1.51	0.77	1.5	1.22

By Linear Regression of Y on X

Slope , mw = **1.8123** **Intercept, bw =** **-0.1663**

Correlation Coefficient* = **0.9972**

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 1.21 m^3/min (43 CFM)

From the Regression Equation, the "Y" value according to

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

Therefore, Set Point W = (m x Qstd + b)^2 x (760 / Pa) x (Ta / 298) = **4.12**

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

Remarks:

QC Reviewer: Leung Yiu Tung Signature: Date: 17 May 17

EQUIPMENT CALIBRATION RECORD

Type:	***Laser Dust Monitor***
Manufacturer/Brand:	***SIBATA***
Model No.:	***LD-3***
Equipment No.:	***A.005.07a***
Sensitivity Adjustment Scale Setting:	***557 CPM***
Operator:	*Mike Shek (MSKM)*

Standard Equipment

Equipment:	*Rupprecht & Patashnick TEOM®*		
Venue:	*Cyberport (Pui Ying Secondary School)*		
Model No.:	*Series 1400AB*		
Serial No:	Control: *140AB219899803*		
	Sensor: *1200C143659803*	K_o: *12500*	
Last Calibration Date*:	*7 May 2016*		

*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	*07-05-16*	*12:15 - 13:15*	*28.1*	*77*	*0.04530*	*1812*	*30.20*
2	*07-05-16*	*13:15 - 14:15*	*28.2*	*76*	*0.04659*	*1863*	*31.05*
3	*07-05-16*	*14:15 - 15:15*	*28.4*	*78*	*0.04560*	*1824*	*30.40*
4	*07-05-16*	*15:15 - 16:15*	*28.5*	*77*	*0.04434*	*1774*	*29.57*

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: *0.9969*

Validity of Calibration Record: *7 May 2017*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 09 May 2016

EQUIPMENT CALIBRATION RECORD

Type:	***Laser Dust Monitor***
Manufacturer/Brand:	***SIBATA***
Model No.:	***LD-3***
Equipment No.:	***A.005.07a***
Sensitivity Adjustment Scale Setting:	***557 CPM***
Operator:	*Mike Shek (MSKM)*

Standard Equipment

Equipment:	*Rupprecht & Patashnick TEOM®*
Venue:	*Cyberport (Pui Ying Secondary School)*
Model No.:	*Series 1400AB*
Serial No:	Control: *140AB219899803*
	Sensor: *1200C143659803* K_o: *12500*
Last Calibration Date*:	*6 May 2017*

*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	*06-05-17*	*12:30 - 13:30*	*27.5*	*78*	*0.04741*	*1894*	*31.57*
2	*06-05-17*	*13:30 - 14:30*	*27.6*	*78*	*0.04823*	*1933*	*32.22*
3	*06-05-17*	*14:30 - 15:30*	*27.6*	*79*	*0.04968*	*1987*	*33.12*
4	*06-05-17*	*15:30 - 16:30*	*27.6*	*79*	*0.04785*	*1915*	*31.92*

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:	*0.9957*
Validity of Calibration Record:	*6 May 2018*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 08 May 2017

EQUIPMENT CALIBRATION RECORD

Type:	***Laser Dust Monitor***
Manufacturer/Brand:	***SIBATA***
Model No.:	***LD-3***
Equipment No.:	***A.005.09a***
Sensitivity Adjustment Scale Setting:	***797 CPM***
Operator:	*Mike Shek (MSKM)*

Standard Equipment

Equipment:	*Rupprecht & Patashnick TEOM®*		
Venue:	*Cyberport (Pui Ying Secondary School)*		
Model No.:	*Series 1400AB*		
Serial No:	Control: *140AB219899803*		
	Sensor: *1200C143659803*	K_o: *12500*	
Last Calibration Date*:	*7 May 2016*		

*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	*07-05-16*	*11:45 - 12:45*	*28.2*	*77*	*0.04623*	*1847*	*30.78*
2	*07-05-16*	*12:45 - 13:45*	*28.2*	*78*	*0.04708*	*1885*	*31.42*
3	*07-05-16*	*13:45 - 14:45*	*28.3*	*76*	*0.04591*	*1836*	*30.60*
4	*07-05-16*	*14:45 - 15:45*	*28.4*	*77*	*0.04333*	*1726*	*28.77*

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

By Linear Regression of Y or X
Slope (K-factor): *0.0015*
Correlation coefficient: *0.9964*

Validity of Calibration Record: *7 May 2017*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 09 May 2016

EQUIPMENT CALIBRATION RECORD

Type:	***Laser Dust Monitor***
Manufacturer/Brand:	***SIBATA***
Model No.:	***LD-3***
Equipment No.:	***A.005.09a***
Sensitivity Adjustment Scale Setting:	***797 CPM***
Operator:	*Mike Shek (MSKM)*

Standard Equipment

Equipment:	*Rupprecht & Patashnick TEOM®*
Venue:	*Cyberport (Pui Ying Secondary School)*
Model No.:	*Series 1400AB*
Serial No:	Control: *140AB219899803*
	Sensor: *1200C143659803* K_o: *12500*
Last Calibration Date*:	*6 May 2017*

*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	*06-05-17*	*12:00 - 13:00*	*27.5*	*78*	*0.04715*	*1881*	*31.35*
2	*06-05-17*	*13:00 - 14:00*	*27.6*	*78*	*0.04843*	*1939*	*32.32*
3	*06-05-17*	*14:00 - 15:00*	*27.6*	*79*	*0.04987*	*1992*	*33.20*
4	*06-05-17*	*15:00 - 16:00*	*27.6*	*79*	*0.04794*	*1916*	*31.93*

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: *0.9961*

Validity of Calibration Record: *6 May 2018*

Remarks:

QC Reviewer: *YW Fung* Signature: Date: 08 May 2017

綜合試驗有限公司
SOILS & MATERIALS ENGINEERING CO., LTD.
G/F., 9/F., 12/F., 13/F. & 20/F., Leader Centre, 37 Wong Chuk Hang Road, Aberdeen, Hong Kong.
香港黃竹坑道37號利達中心地下，9樓，12樓，13樓及20樓
E-mail: smec@cigismec.com Website: www.cigismec.com
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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 16CA0704 03-01 **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 / N.009.06	,	2791211
Adaptors used:	-	,	-

Item submitted by

Customer Name:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	04-Jul-2016

Date of test: 07-Jul-2016

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	18-Jun-2017	CIGISMEC
Signal generator	DS 360	33873	18-Apr-2017	CEPREI
Signal generator	DS 360	61227	18-Apr-2017	CEPREI

Ambient conditions

Temperature:	22 ± 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 responsess 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:** 09-Jul-2016 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

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CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA0704 03-01 **Page** 2 **of** 2

1, Electrical Tests

The electrical tests were perfomed 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	
Frequency weightings	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: Fung Chi Yip **Date:** 07-Jul-2016

Checked by: Lam Tze Wai **Date:** 09-Jul-2016

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.

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

N.009.04

Certificate No.: 17CA0407 01 **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	,	2250455
Adaptors used:	-	,	-

Item submitted by

Customer Name:	AECOM ASIA CO., LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	07-Apr-2017

Date of test: 10-Apr-2017

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	18-Jun-2017	CIGISMEC
Signal generator	DS 360	33873	18-Apr-2017	CEPREI
Signal generator	DS 360	61227	18-Apr-2017	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	50 ± 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 responsess of the Sound Level Meter.

Test results

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

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

Actual Measurement data are documented on worksheets.

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 11-Apr-2017 **Company Chop:** SOILS AND MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 17CA0407 01 **Page** 2 **of** 2

1, Electrical Tests

The electrical tests were perfomed 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	
Frequency weightings	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: Lai Sheng Jie **Date:** 10-Apr-2017

Checked by: Lam Tze Wai **Date:** 11-Apr-2017

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.

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

Certificate No.: 16CA1201 01 **Page:** 1 **of** 2

Item tested

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

Item submitted by

Curstomer:	AECOM ASIA CO. LTD.
Address of Customer:	-
Request No.:	-
Date of receipt:	01-Dec-2016

Date of test: 05-Dec-2016

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	14-Apr-2017	SCL
Preamplifier	B&K 2673	2239857	28-Apr-2017	CEPREI
Measuring amplifier	B&K 2610	2346941	26-Apr-2017	CEPREI
Signal generator	DS 360	61227	18-Apr-2017	CEPREI
Digital multi-meter	34401A	US36087050	18-Apr-2017	CEPREI
Audio analyzer	8903B	GB41300350	19-Apr-2017	CEPREI
Universal counter	53132A	MY40003662	19-Apr-2017	CEPREI

Ambient conditions

Temperature:	22 ± 1 °C
Relative humidity:	55 ± 10 %
Air pressure:	1005 ± 5 hPa

Test specifications

1, 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.

2, The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.

3, The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

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

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

Approved Signatory: Huang Jian Min/Feng Jun Qi **Date:** 08-Dec-2016 **Company Chop:** SOILS & MATERIALS ENGINEERING COMPANY LTD. 綜合試驗有限公司

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

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HOKLAS 028 CAL

CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 16CA1201 01 **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.

(Output level in dB re 20 μPa)

Frequency Shown Hz	Output Sound Pressure Level Setting dB	Measured Output Sound Pressure Level dB	Estimated Expanded Uncertainty dB
1000	94.00	94.22	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 = 986.6 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 = 0.5 %**

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:** 05-Dec-2016

Checked by: Lam Tze Wai **Date:** 08-Dec-2016

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 May 2017

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

Contract No. HY/2012/06
Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange
Tentative Impact Monitoring and Audit Schedule for June 2017

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

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

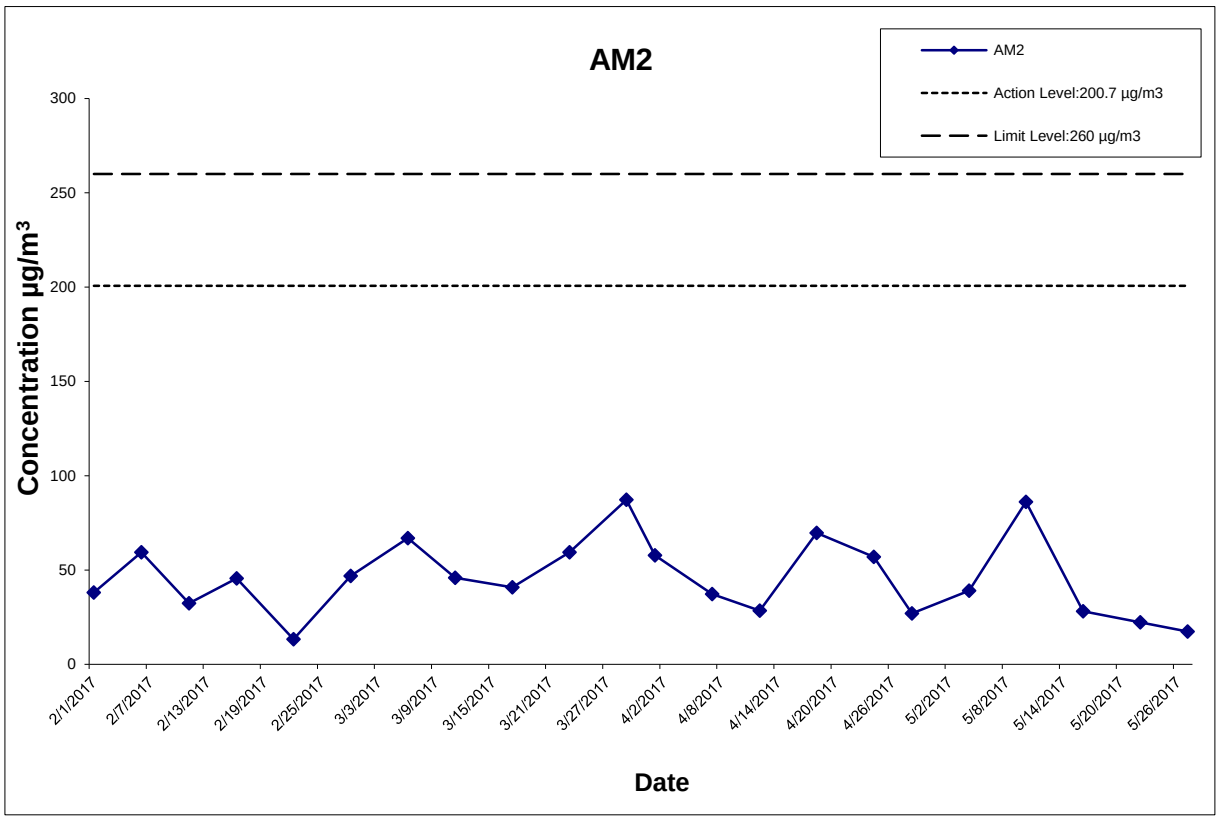
APPENDIX G
IMPACT AIR QUALITY MONITORING RESULTS AND THEIR GRAPHICAL PRESENTATION

Appendix G
Impact Air Quality Monitoring Results

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

Date	Weather Condition	Air Temp. (^{o}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. ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
				Initial	Final			Initial	Final		Initial	Final				
4-May-17	Cloudy	24.9	1011.9	1.314	1.314	1.314	1892.2	2.7842	2.8579	0.0737	8658.02	8682.02	24.00	39.0	200.7	260
10-May-17	Sunny	27.1	1013.8	1.314	1.314	1.314	1892.2	2.7655	2.9286	0.1631	8682.02	8706.02	24.00	86.2	200.7	260
16-May-17	Rainy	25.0	1007.6	1.314	1.314	1.314	1892.2	2.7836	2.8367	0.0531	8706.02	8730.02	24.00	28.1	200.7	260
22-May-17	Cloudy	24.6	1008.1	1.314	1.314	1.314	1892.2	2.7912	2.8333	0.0421	8730.02	8754.02	24.00	22.2	200.7	260
27-May-17	Sunny	26.1	1010.0	1.314	1.314	1.314	1892.2	2.7727	2.8057	0.0330	8754.02	8778.02	24.00	17.4	200.7	260

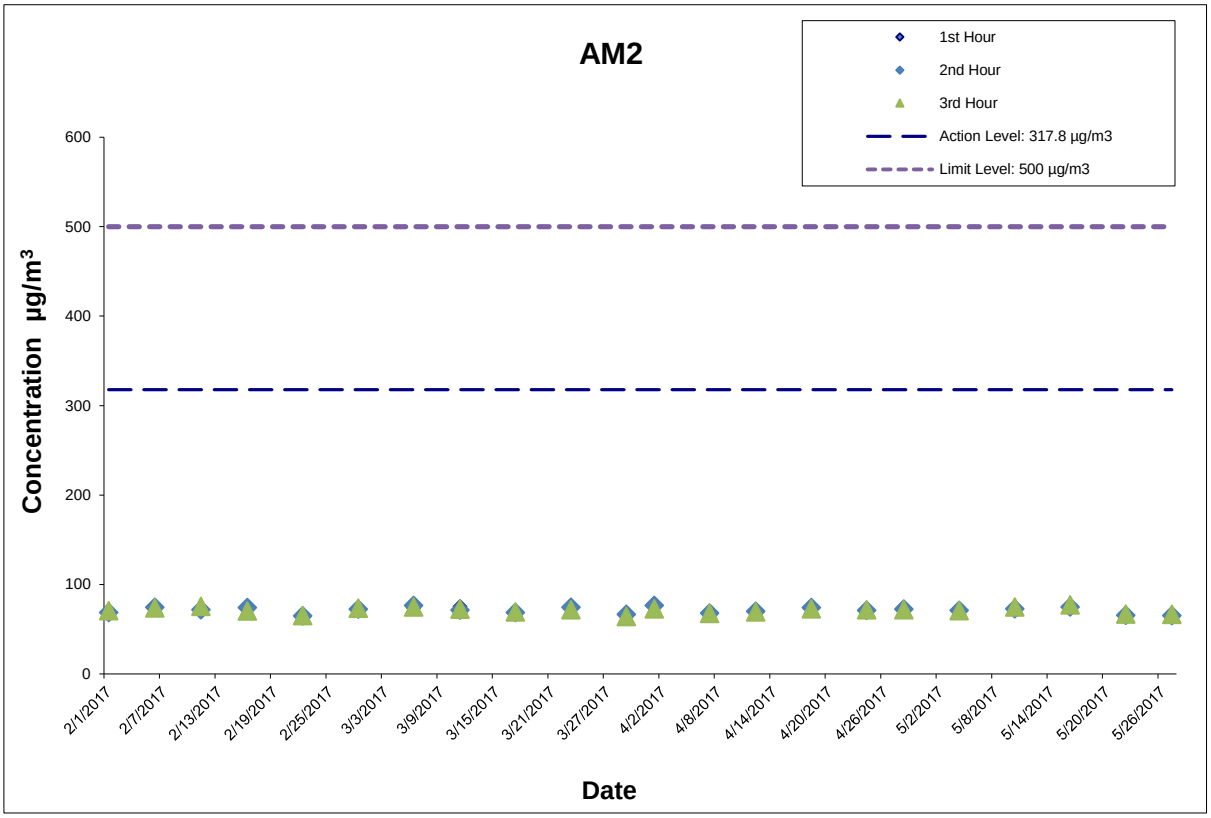
Average	38.6
Min	17.4
Max	86.2



Appendix G
Impact Air Quality Monitoring Results

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

Date	Start Time (hh:mm)	1st Hour Conc. ($\mu g/m^3$)	2nd Hour Conc. ($\mu g/m^3$)	3rd Hour Conc. ($\mu g/m^3$)
4-May-17	13:10	70.6	71.2	70.8
10-May-17	11:20	73.8	72.9	74.8
16-May-17	13:05	73.6	74.8	77.2
22-May-17	11:35	66.2	65.5	66.9
27-May-17	11:00	66.0	65.3	66.7
			Average	70.4
			Min	65.3
			Max	77.2



APPENDIX H
METEOROLOGICAL DATA FOR THE REPORTING MONTH

Daily Extract of Meteorological Observations, May 2017 - Tai Po

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	1012.3	26.7#	23.7	21.3#	21.4	87	***	***	***
02	1011.5	27.1#	25.2	23.0#	23.5	90	***	***	***
03	1010.9	30.1	27	25.1	24.1	85	***	***	***
04	1011.6	26.7#	24	22.3#	23.5	97	***	***	***
05	1013.3	28.1#	25	21.7#	23.3	91	***	***	***
06	1014.5	30	26.8	23.8	23.8	84	***	***	***
07	1014.3	26.2	25.3	24.5	22.8	86	***	***	***
08	1011.6	27.1	24.9	21.7	23	89	***	***	***
09	1012	29.2#	25.1	21.6#	23	89	***	***	***
10	1013.5	28.8	26.1	24.1	24	89	***	***	***
11	1013.4	29.7	26.7	24.8	24	86	***	***	***
12	1010.4	30.9	27.6	25.2	22.7	76	***	***	***
13	1009.8	26.6	24.9	23.4	22.9	89	***	***	***
14	1010	28.5#	25.5	22.6#	23.9	91	***	***	***
15	1008.3	26.4	24.6	23.3	24.2	97	***	***	***
16	1007.4	25.5#	23.8	22.1#	22.4	92	***	***	***
17	1009.5	27.7	24.7	21.6	21.4	83	***	***	***
18	1011.9	26.2	24.8	23.4	20.7	78	***	***	***
19	1011	25.2	23.8	21.4	20.9	84	***	***	***
20	1008.7	24.4	23.2	21.9	22.1	93	***	***	***
21	1007.7	24.9	23.8	22.5	22	90	***	***	***
22	1008	24.9	24.4	23.9	23.1	93	***	***	***
23	1007.7	27.6	25.5	23.9	24.9	97	***	***	***
24	1006.7	25.8	24.8	23.8	24.6	99	***	***	***
25	1008.7	27.4	24.9	23	21.8	83	***	***	***
26	1010.2	25.6	23.8	21.9	20.6	83	***	***	***
27	1010	28.9	25.2	22	18.9	70	***	***	***
28	1009.5	29.3	26.3	24	20.2	70	***	***	***
29	1009.8	29.2	26.1	24.5	21.4	76	***	***	***
30	1009.2	29.3	26.2	24.8	23.2	84	***	***	***
31	1006.1	32.7	28	24.2	24.5	82	***	***	***

Note:

1. Data from Hong Kong Observatory
2. Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

*** unavailable

data incomplete

Daily Extract of Meteorological Observations, May 2017 - Tai Mei Tuk

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	***	27.8#	23.9	21.3#	***	***	0	50	6.5
02	***	28.8	25.5	22.9	***	***	0	50	6.2
03	***	29.9	26.7	24.9	***	***	0	150	7.2
04	***	26	23.9	22.3	***	***	59	150	5.2
05	***	29.6	25.5	22.1	***	***	0	130	3
06	***	31.9	27	24.1	***	***	0	130	7.8
07	***	26.8#	24.9	24.0#	***	***	0	90	18.2
08	***	28.4#	24.9	21.7#	***	***	6	70	13.5
09	***	30.2#	25.8	21.7#	***	***	6.5	140	4.3
10	***	30.5#	26.7	24.4#	***	***	0	80	5.6
11	***	30.8#	27	24.7#	***	***	0	80	10.7
12	***	31.6	27.6	25.4	***	***	0	280	7.2
13	***	26.7	25.2	23.7	***	***	8	260	3.4
14	***	30.0#	26.1	23.0#	***	***	0.5	140	5.7
15	***	26	24.5	23	***	***	41	50	10.4
16	***	25.6#	23.8	21.7#	***	***	36.5	50	8.8
17	***	28.6#	25	22.3#	***	***	0	100	6.4
18	***	27.2#	24.4	22.4#	***	***	1	50	13
19	***	25.7#	23.6	21.5#	***	***	2.5	50	15.6
20	***	24.1#	23	21.6#	***	***	3	60	12.1
21	***	24.8#	23.6	22.5#	***	***	0	90	17.9
22	***	24.7	24.1	23	***	***	2.5	80	18.1
23	***	28.7#	25.5	23.9#	***	***	8	50	9.5
24	***	25.6#	24.7	23.5#	***	***	67.5	270	8
25	***	28.8#	25.1	22.7#	***	***	0	70	6.5
26	***	26.4	23.9	22.4	***	***	0	70	6.5
27	***	29.0#	25.3	22.5#	***	***	0	90	9.1
28	***	30.9	26.4	23.6	***	***	0	90	11.7
29	***	30.9	26.2	24.1	***	***	0	90	16
30	***	30.0#	26	24.2#	***	***	0	40	9.5
31	***	33	28.3	24.5	***	***	0	220	7

Note:

1. Data from Hong Kong Observatory
2. Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

*** unavailable

data incomplete

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

Appendix I Impact Daytime Construction Noise Monitoring Results

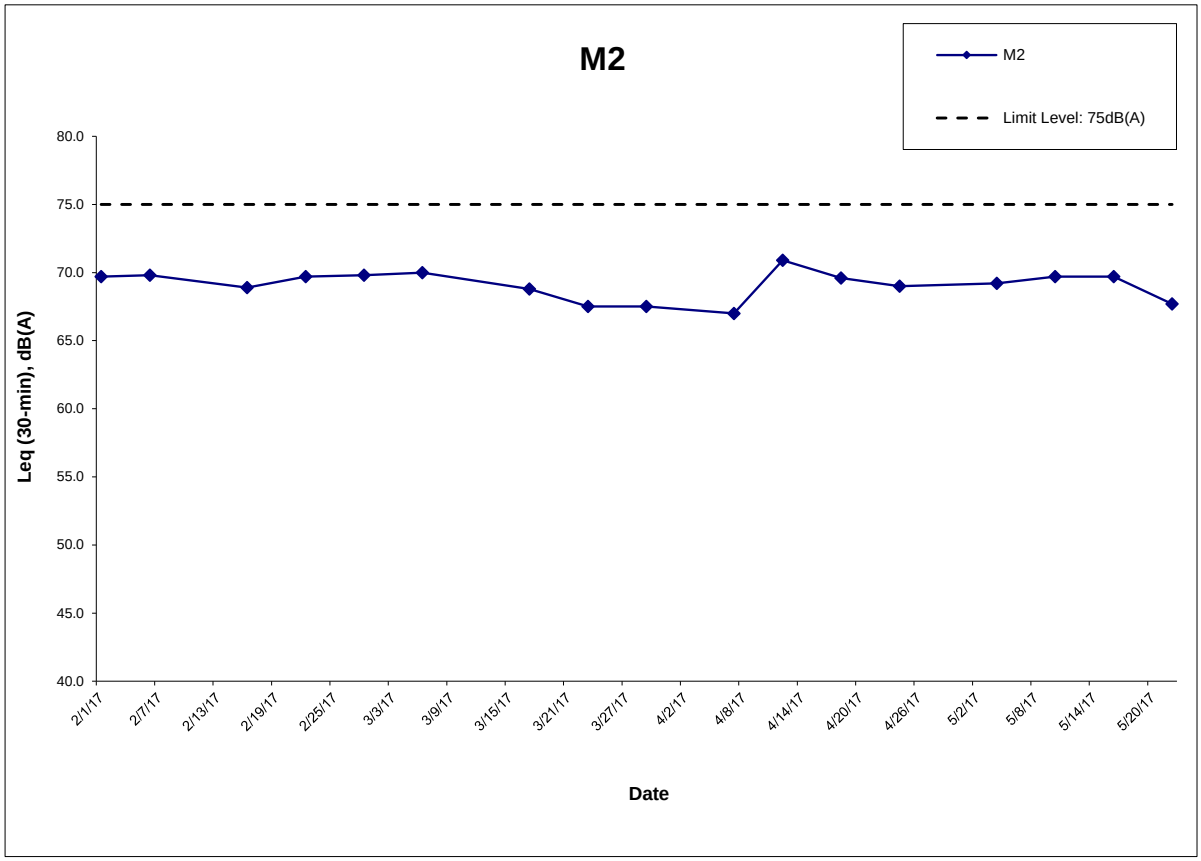
Location : M2 (West Tai Wo - Free Field)
Day time 07:00-19:00 hrs Normal Weekdays Impact Noise Monitoring Results

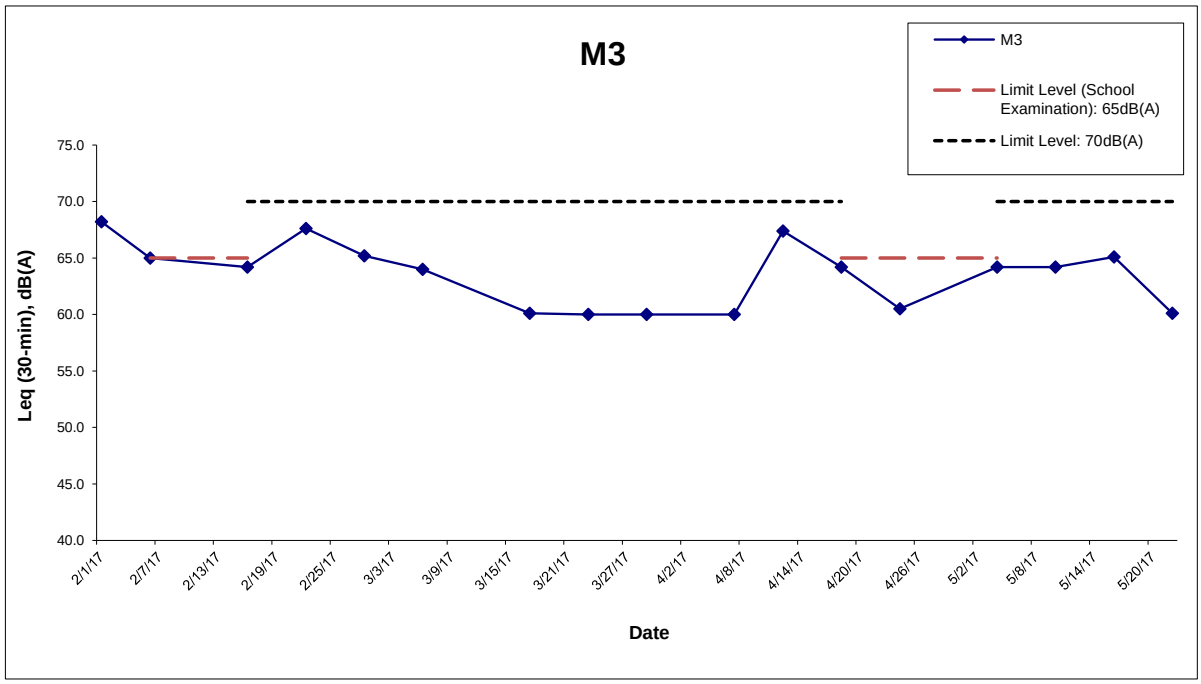
Date	Measured Noise Level for 30-min, dB(A)				Limit Level, dB(A)	Exceedance (Y/N)
	Start Time	Leq*	L10*	L90*		
4-May-17	13:10	69.2	73.6	64.0	75	N
10-May-17	11:15	69.7	72.9	63.5	75	N
16-May-17	14:05	69.7	71.3	67.2	75	N
22-May-17	13:10	67.7	69.0	64.5	75	N
	Min	67.7	69.0	63.5		
	Max	69.7	73.6	67.2		
	Average	69.1	72.0	65.1		

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		
4-May-17	14:05	64.2	67.8	60.6	65	N
10-May-17	11:30	64.2	67.2	59.6	70	N
16-May-17	13:10	65.1	67.3	32.2	70	N
22-May-17	11:35	60.1	61.0	56.0	70	N
	Min	60.1	61.0	32.2		
	Max	65.1	67.8	60.6		
	Average	63.8	66.5	57.9		

* +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.

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

Event / Action Plan for Air Quality

Event Action Level	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Limit Level				
Exceedance for one sample	1. Identify source; 2. Inform IEC, ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase frequency to daily; 5. Analyse Contractor's working procedures to determine possible mitigation to be; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. 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.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by ER until the exceedance is abated.

Event / Action Plan for Noise Impact

Event Limit Level	Action			
	ET Leader	**IEC**	**ER**	**Contractor**
Action Level	1. Notify IEC and the Contractor. 2. Carry out investigation. 3. Report the results of investigation to IEC and the Contractor. 4. Discuss with the Contractor and formulate remedial measures. 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review with analysed results submitted by ET. 2. Review the proposed remedial measures by the Contractor and advise ER accordingly. 3. Supervise the implement of remedial measures.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IEC. 2. Implement noise mitigation proposals.
Limit Level	1. Notify, IEC, ER, EPD and the Contractor. 2. Identify the source. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. 6. Inform IEC, ER, and EPD the causes & actions taken for the exceedances. 7. Assess effectiveness of the Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET Leader and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise ER accordingly. 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 5. If exceedance continues, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by the ER until the exceedance is abated.

APPENDIX K
SITE INSPECTION SUMMARIES

Site Inspection Summary

Inspection Information

Contract No.	HY/2012/06
Date:	2 May 2017
Time:	13:30
Inspection No.:	181

Non-compliance

Nil

Observations

	Follow-up Observation(s)
1.	Exposed slope without cover observed at SA310 was covered entirely by impervious sheeting to avoid potential windblown dust emission. (Closed)
2.	Dusty public access road observed at SA323 was cleaned up. (Closed)
3.	Construction wastes found scattered on ground at SA324 were removed to maintain the site clean and tidy. (Closed)
	New Observation(s)
4.	Surface runoff of muddy water was observed at SA340. The Contractor should remove the muddy water and implement effective measures to prevent sand from being flushed to public road.
5.	Exposed stockpiles of dusty materials were found at SA340. The Contractor should cover the stockpiles entirely by impervious sheeting to avoid potential windblown dust emission.
6.	Water sprayed on open site area was found inadequate at NB75. The Contractor should spray the open site area with adequate water to prevent potential windblown dust emission.
7.	Construction wastes were found scattered on ground at SA346. The Contractor should remove the wastes and maintain the site clean and tidy.
	Reminder (s)
	Nil.
	Follow-up Observation(s) – 02/HY/2015
	Nil.
	New Observation(s) – 02/HY/2015
8.	Mud trail was observed. The Contractor should clean up the mud trail for dust suppression and ensure the wheel washing facility is operated properly.
	Reminder (s) – 02/HY/2015
	Nil.

Remarks

Nil

	Name	Signature	Date
Prepared by	Sammi Lam	Sam Lam	2 May 2017
Checked by	Y W Fung	/	2 May 2017

Site Inspection Summary

Inspection Information

Contract No.	HY/2012/06
Date:	9 May 2017
Time:	14:00
Inspection No.:	182

Non-compliance

Nil

Observations

	Follow-up Observation(s)
1.	Surface runoff of muddy water observed at SA340 was removed. (Closed)
2.	Exposed stockpiles of dusty materials found at SA340 were covered entirely by impervious sheeting. (Closed)
3.	Adequate water was sprayed on open site area at NB75 and keep clear of dusty materials. (Closed)
4.	Construction wastes found scattered on ground at SA346 were removed and the materials were kept tidy. (Closed)
	New Observation(s)
5.	Mud trail was observed at SA328. The Contractor should clean up the mud trail and ensure the wheel washing facility is operated properly.
6.	Non-Road Mobile Machineries (NRMM) without proper labels were found at NB54b and NB63. The Contractor should ensure valid labels are provided to all NRMM before operation.
7.	Construction wastes were found scattered on ground at SA328. The Contractor should remove the wastes and keep the site clean and tidy.
8.	Chemical container without secondary containment was observed at SA320. The Contractor should provide drip tray to avoid potential leakage.
	Reminder (s)
	Nil.
	Follow-up Observation(s) – 02/HY/2015
9.	Mud trail observed was cleared. The site entrance has been abandoned and the wheel washing bay will not be used. (Closed)
	New Observation(s) – 02/HY/2015
	Nil.
	Reminder (s) – 02/HY/2015
	Nil.

Remarks

Nil

	Name	Signature	Date
Prepared by	Sammi Lam	Sam Lam	9 May 2017
Checked by	Y W Fung	/	9 May 2017

Site Inspection Summary

Inspection Information

Contract No.	HY/2012/06
Date:	18 May 2017
Time:	14:00
Inspection No.:	183

Non-compliance

Nil

Observations

	Follow-up Observation(s)
1.	Mud trail observed at SA328 was cleaned up. (Closed)
2.	Non-Road Mobile Machineries (NRMM) without proper labels found at NB54b was provided with valid NRMM label. Excavator without NRMM label observed at NB63 was removed off site. (Closed)
3.	Construction wastes found scattered on ground at SA328 were removed to keep the site clean and tidy. (Closed)
4.	Chemical container without secondary containment observed at SA320 was provided with drip tray to avoid potential leakage. (Closed)
	New Observation(s)
5.	Stagnant water was observed at NB64. The Contractor should remove the stagnant water or apply larvicidal oil to prevent mosquito breeding.
6.	Construction wastes were found scattered on ground at SA328 and Tai Wo Bridge. The Contractor should remove the construction wastes to keep the site clean and tidy.
	Reminder (s)
	Nil.
	Follow-up Observation(s) – 02/HY/2015
	Nil.
	New Observation(s) – 02/HY/2015
	Nil.
	Reminder (s) – 02/HY/2015
	Nil.

Remarks

Nil

	Name	Signature	Date
Prepared by	Sammi Lam		18 May 2017
Checked by	Y W Fung	/	18 May 2017

Site Inspection Summary

Inspection Information

Contract No.	HY/2012/06
Date:	23 May 2017
Time:	14:00
Inspection No.:	184

Non-compliance

Nil

Observations

	Follow-up Observation(s)
1.	Stagnant water observed at NB64 was removed to prevent mosquito breeding. (Closed)
2.	Construction wastes found scattered on ground at SA328 and Tai Wo Bridge were removed to keep the site clean and tidy. (Closed)
	New Observation(s)
3.	Dusty road was observed at NB77. The Contractor should provide sufficient measures to keep the road clear of dusty materials.
4.	Retained water was observed in the drip tray at SA346. The Contractor should remove the retained water to avoid mosquito breeding.
	Reminder (s)
	Nil.
	Follow-up Observation(s) – 02/HY/2015
	Nil.
	New Observation(s) – 02/HY/2015
5.	Mud trail was observed. The Contractor should clean up the mud trail and ensure vehicles are wheel-washed properly before leaving the site.
6.	Exposed stockpile without proper cover was observed. The Contractor should cover the stockpile entirely with impervious sheeting to prevent windblown dust emission.
7.	Stagnant water was observed. The Contractor should remove the stagnant water or apply larvicidal oil to prevent mosquito breeding.
	Reminder (s) – 02/HY/2015
	Nil.

Remarks

Nil

	Name	Signature	Date
Prepared by	Sammi Lam	Sammi Lam	23 May 2017
Checked by	Y W Fung	/	23 May 2017

Site Inspection Summary

Inspection Information

Contract No.	HY/2012/06
Date:	31 May 2017
Time:	14:00
Inspection No.:	185

Non-compliance

Nil

Observations

	Follow-up Observation(s)
1.	Dusty road observed at NB77 was cleaned up. (Closed)
2.	Retained water observed in the drip tray at SA346 was removed to avoid mosquito breeding. (Closed)
	New Observation(s)
3.	Water sprayed for open site area was found inadequate at SA328. The Contractor should spray the open site area with adequate water to avoid windblown dust emission.
4.	Mud trails were observed at SA328. The Contractor should clean up the mud trails and ensure vehicles are wheel-washed properly before leaving the site.
5.	Construction wastes were found scattered on ground at SA328. The Contractor should remove the construction wastes to keep the site clean and tidy.
6.	Stagnant water was observed at NB48. The Contractor should remove the stagnant water to prevent mosquito breeding.
	Reminder (s)
	Nil.
	Follow-up Observation(s) – 02/HY/2015
7.	Mud trail observed was cleaned up. (Closed).
8.	Exposed stockpile without proper cover observed was covered entirely with impervious sheeting to prevent windblown dust emission. (Closed)
9.	Stagnant water observed was removed to prevent mosquito breeding. (Closed)
	New Observation(s) – 02/HY/2015
	Nil.
	Reminder (s) – 02/HY/2015
	Nil.

Remarks

Nil

	Name	Signature	Date
Prepared by	Sammi Lam		31 May 2017
Checked by	Y W Fung	/	31 May 2017

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

Appendix L

Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Contract No. HY/2012/06 – Widening of Fanling Highway – Tai Hang to Wo Hop Shek Interchange

	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	1	7
	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	EPD referred an air complaint on 24 October 2014. 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. The resident also complained that the stockpiles have not been covered and watered properly. He now requires the EPD to follow up. The location of complaint is near Lamppost Location EB5717.	Closed		
	31 December 2014	EPD referred a water complaint on 31 December 2014. 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. He required the EPD to follow up.	Closed		
	25 March 2015	EPD referred a water complaint on 25 March 2015. 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. The situation has continued for a few weeks and she asked the EPD to follow up as soon as possible.	Closed		

	Date Received	Subject	Status	Total no. followed up by the ET this month	Total no. followed up by the ET since project commencement
	5 January 2017 (Referred by the Contractor on 13 January 2017)	A complaint was received by the 1823 enquiry and complaint hotline on 5 January 2017. The complaint was referred to the Environmental Team by the Contractor on 13 January 2017. The complainant complained against the dust emission generated by the Widening of Fanling Highway construction site on Tai Wo Service Road West near Tai Hang Village. The complainant also complained that Highway Department did not conduct road surface cleansing, which affects residents' health. He/she now requires the Highway Department to follow up.	Closed		
	22 May 2017 (Referred by the Contractor on 23 May 2017)	A complaint was received by the 1823 enquiry and complaint hotline on 22 May 2017. The complaint was referred to the Environmental Team by the Contractor on 23 May 2017. A complainant complained that construction noise was caused by the erection of noise barrier on Tai Wo Service Road West near Tai Hang Village on Sunday(s). The complainant concerned about if any Construction Noise Permit is issued by the Environmental Protection Department.	Under Investigation		

	Date Received	Subject	Status	Total no. followed up by the ET this month	Total no. followed up by the ET since project commencement
Notification of summons	-	-	-	0	0
Successful Prosecutions	-	-	-	0	0

Contract No. 02/HY/2015 – Provision of Bus-Bus Interchange on Fanling Highway Kowloon Bound

	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	-	-	-	0	0
Notification of summons	-	-	-	0	0
Successful Prosecutions	-	-	-	0	0