

Highways Department

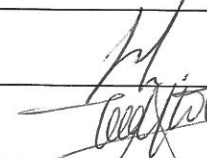

Agreement No. CE 20/2009 (EP)

**Environmental Team for the Widening of
Tolo Highway / Fanling Highway between
Island House Interchange and Fanling**

**(Stage 1)
Between Island House Interchange and
Tai Hang - Investigation**

**Monthly EM&A Report
for January 2013**

[02/2013]

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18 February 2013
By Fax (2805 5028) and Post

Attn.: Mr. James Penny

Dear Sir,

**Widening of Tolo Highway between
Island House Interchange and Tai Hang
Environmental Permit No.: EP-324/2008/A
Condition 3.3 – Submission of Monthly EM&A Report for January 2013 (Stage 1)**

We refer to the captioned Monthly EM&A Report received on 8 and 18 February 2013 submitted by ET via email. Pursuant to EP Condition 3.3, I hereby verify the Monthly EM&A Report for January 2013 (Stage 1) for the Project.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED

Terence Kong
Independent Environmental Checker

c.c. HyD – Mr. Raymond T W Kong / Mr. Dennis Wong / Mr. William Chiang (Fax: 2761 4864)

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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) and is governed by an Environmental Permit (EP-324/2008)(EP) issued by EPD on 23 December 2008. Subsequently, EPD issued a Variation of Environmental Permit (EP-324/2008/A) (VEP) on 31 January 2012.

The Project aims to widen Tolo Highway and Fanling Highway to dual 4-lane carriageway in order to alleviate the current traffic congestion problems and to cope with the increasing transport demands to and from the urban areas and also cross boundary traffic.

The construction works for this Project will be delivered in 2 stages i.e. Stage 1 (between Island House Interchange and Tai Hang) and Stage 2 (between Tai Hang and Wo Hop Shek Interchange). The construction works of Stage 1 were commenced on 23 November 2009 and will tentatively be completed in December 2013; while construction programme of Stage 2 is currently under review. This report focuses on Stage 1 of the Project only.

The construction phase of Stage 1 under the EP and the Environmental Monitoring and Audit (EM&A) programme for Stage 1 of the Project commenced on 23 November 2009. 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 January 2013. As informed by the Contract 1 Contractor (China State Construction Engineering (Hong Kong) Ltd.), construction activities in the reporting period were:-

- Temporary shoring, sheetpiling and excavation;
- Pile cap construction (Noise Barrier);
- Installation of soil nails;
- At-grade road construction;
- Widening and demolition of central dividers;
- Retaining wall construction;
- Bridge deck construction;
- Noise barrier footing construction;
- Noise barrier panels installation;
- Asphalt laying;
- Installation of Drainage Pipes;
- Modification of Edge coping; and
- Pre-bored socket H-pile.

The construction works carried out by the Contract 2 Contractor (Gammon Construction Ltd.) in the reporting period were:-

- Condition survey of existing structures;
- Initial and record survey;
- Survey Setting out works for slopes and structures;
- Setting up the temporary traffic arrangement;
- Excavation of trial trenches to locate existing utilities;
- Construction of haul road;
- Extension of box culvert and subway;
- Structural works of bridges;
- Construction of Pilecap / Spread footing of Noise Barrier / Semi Noise Enclosure;
- Slope works, including installation of soil nails;
- NTHA Mitigation Works;
- Retaining wall construction;
- Noise barrier construction;
- Modification / Demolition of existing bridge structures;
- Entrusted watermains works; and
- Sewer Installation.

Reporting Change

There was no reporting change required in the reporting month.

Breaches of Action and Limit Levels for Air Quality

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

Breaches of Action and Limit Levels for Noise

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

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

Complaint, Notification of Summons and Successful Prosecution

There were two (2) follow-up complaints (included two (2) noise related complaints) received on December 2012 and followed up by Environmental Team in January 2013. Summary of investigation is described in Section 4.6.4 – 4.6.5.

There were three (3) complaints (included one (1) air related complaint, one (1) noise related complaint and one (1) water related complaint followed up by the Environmental Team in January 2013. For the air related complaint, investigation was carried out and the findings, proposed mitigation measures and follow-up site inspection were submitted to all relevant parties. For the noise related complaint, investigation was carried out and the findings were submitted to all relevant parties. For the water related complaint, the complaint was still under investigation in January 2013 and the investigation result will be reported in next Monthly EM&A Report (February 2013). Summary of investigation is described in Section 4.6.6 – 4.6.8.

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

Future Key Issues

Key issues to be considered in the coming month included:-

- Properly store and label oils and chemicals on site;
- Chemical, chemical waste and waste management;
- Collection of construction waste should be carried out regularly;
- Site runoff should be properly collected and treated prior to discharge;
- 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;
- Suppress dust generated from excavation, breaking and drilling activities, haul road traffic and grout mixing process;
- Quieter powered mechanical equipment should be used;
- Closely check and replace the sound insulation materials wrapped at the concrete breaker tip regularly;
- Better scheduling of construction works to minimize noise nuisance; 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 expressways in the North East New Territories connecting Sha Tin, Tai Po and Fanling. These highways form a vital part of the strategic Route 9, which links other major strategic routes to Shenzhen. At present, this section of Route 9 is dual 3-lane carriageway. However, at several major interchanges along this section of Route 9, the highway is only dual-2 lane. Severe congestion is a frequent occurrence during peak periods, particularly in the Kowloon bound direction.
- 1.1.2. The objective of the Project “Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling” is to widen Tolo Highway and Fanling Highway to dual 4-lane carriageway in order to alleviate the current traffic congestion problems and to cope with the increasing transport demands to and from the urban areas and also cross boundary traffic.
- 1.1.3. The Project is a designated project and is governed by an Environmental Permit (EP-324/2008)(EP) issued by EPD on 23 December 2008. Subsequently, EPD issued a Variation of Environmental Permit (EP-324/2008/A) (VEP) on 31 January 2012.
- 1.1.4. The scope of the Project comprises mainly:-
- (i) Widening of a 5.7 km section of Tolo Highway and 3.0 km section of Fanling Highway between Island House Interchange and Wo Hop Shek Interchange from the existing dual 3-lane to dual 4-lane, including construction of new vehicular bridges;
 - (ii) Widening of interchange sections at Island House Interchange, Tai Po North Interchange, and Lam Kam Road Interchange from dual 2-lane to dual 3-lane, except Sha Tin bound carriageway at Tai Po North Interchange, which is widened from 3-lane to 4-lane, including realignment of various slip roads;
 - (iii) Modification and reconstruction of highways, vehicular bridges, underpasses and footbridges.
- 1.1.5. The construction works for this Project will be delivered in 2 stages i.e. Stage 1 (between Island House Interchange and Tai Hang) and Stage 2 (between Tai Hang and Wo Hop Shek Interchange). The construction works of Stage 1 commenced on 23 November 2009 and will tentatively be completed in December 2013; while construction programme of Stage 2 is currently under review. This report focuses on Stage 1 of the Project only.
- 1.1.6. The construction works for Stage 1 of the Project will be implemented under 2 works contracts (Contract 1 and Contract 2). Contract 1 covers the section of Tolo Highway between Island House Interchange and Ma Wo, Contract 2 covers the section of Tolo Highway between Ma Wo and Tai Hang.
- 1.1.7. Hyder-Arup-Black and Veatch Joint Venture (HABVJV) are appointed by Highways Department (HyD) as the consultants for the design and construction assignment for the Tolo project under Agreement No. CE 58/2000 Supplementary Agreement No. 3 (SA3) (i.e. the Engineer for the Contracts).
- 1.1.8. China State Construction Engineering (Hong Kong) Ltd. (CSHK) was commissioned as the Contractor of Contract 1 of Stage 1 of the Project, while Gammon Construction Limited (GCL) was commissioned as the Contractor of Contract 2 of Stage 1 of the Project.
- 1.1.9. AECOM Asia Co. Ltd. was employed by HyD as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) works for Stage 1 of the Project and Mott MacDonald Hong Kong Ltd. acts as the Independent Environmental Checker (IEC) for the Contracts.
- 1.1.10. The construction phase of Stage 1 under the EP commenced on 23 November 2009.
- 1.1.11. According to the updated EM&A Manual of Stage 1 of the Project, there is a need of an EM&A programme including air quality and noise monitoring. The EM&A programme for Stage 1 of the Project commenced on 23 November 2009.

1.2 Scope of Report

1.2.1 This is the thirty-ninth monthly EM&A Report under the Agreement No. CE 20/2009 (EP) - Widening of Tolo Highway between Island House Interchange and Tai Hang – Investigation. This report presents a summary of the environmental monitoring and audit works, list of activities and mitigation measures proposed by the ET for Stage 1 of the Project in January 2013.

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 of Stage 1, Contract 1 (Hyder-Arup-Black & Veatch Joint Venture)	Chief Resident Engineer /TOL01	James Tsang	9038 8797	26674000
ER of Stage 1, Contract 2 (Hyder-Arup-Black & Veatch Joint Venture)	Chief Resident Engineer /TOL02	Paul Appleton	9097 5833	2653 2348
IEC of Stage 1 (Mott MacDonald Hong Kong Limited)	Independent Environmental Checker	Terence Kong	2828 5919	2827 1823
Contractor of Stage 1, Contract 1 (China State Construction Engineering (Hong Kong) Limited)	Site Agent	Eddie Tang	9863 7686	2667 5666
	Environmental Officer	Ken Cheung	9803 5297	2667 5666
		M L Lam	9489 4641	2667 5666
Contractor of Stage 1, Contract 2 (Gammon Construction Limited)	Site Agent	John Chan	3126 1202	2559 3410
	Environmental Officer	Thomson Chang	9213 6569	2559 3410
		Crispin Ao	9223 8773	2559 3410
		Ao Ho Fo	9220 5848	2559 3410
ET of Stage 1 (AECOM Asia Company Limited)	ET Leader	Y T Tang	3922 9393	2371 7609

1.4 Summary of Construction Works

1.4.1 The construction phase of Stage 1 under the EP commenced on 23 November 2009.

1.4.2 Details of the construction works carried out by the Contract 1 Contractor (China State Construction Engineering (Hong Kong) Ltd.) in this reporting period are listed below:-

- Temporary shoring, sheetpiling and excavation;
- Pile cap construction (Noise Barrier);
- Installation of soil nails;
- At-grade road construction;
- Widening and demolition of central dividers;
- Retaining wall construction;
- Bridge deck construction;
- Noise barrier footing construction;
- Noise barrier panels installation;
- Asphalt laying;
- Installation of Drainage Pipes;
- Modification of Edge coping; and
- Pre-bored socket H-pile.

1.4.3 Details of the construction works carried out by the Contract 2 Contractor (Gammon Construction Ltd.) in this reporting period are listed below:-

- Condition survey of existing structures;
- Initial and record survey;
- Survey Setting out works for slopes and structures;
- Setting up the temporary traffic arrangement;
- Excavation of trial trenches to locate existing utilities;
- Construction of haul road;
- Extension of box culvert and subway;
- Structural works of bridges;
- Construction of Pilecap / Spread footing of Noise Barrier / Semi Noise Enclosure;
- Slope works, including installation of soil nails;
- NTHA Mitigation Works;
- Retaining wall construction;
- Noise barrier construction;
- Modification / Demolition of existing bridge structures;
- Entrusted watermains works; and
- Sewer Installation.

1.4.4 The Construction Programmes are shown in Appendix B.

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

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

1.5 Summary of EM&A Programme Requirements

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

- All monitoring parameters;
- Monitoring schedules for the reporting month and forthcoming months;
- Action and Limit levels for all environmental parameters;
- Event / Action Plan;

- Environmental mitigation measures, as recommended in the Project EIA study final report; and
- Environmental requirement in contract documents.

2 AIR QUALITY MONITORING

2.1 Monitoring Requirements

2.1.1 In accordance with the updated EM&A Manual, baseline 1-hour and 24-hour TSP levels at 4 air quality monitoring stations were established. Impact 1-hour TSP monitoring was conducted for at least three times every 6 days, while impact 24-hour TSP monitoring was carried out for at least once every 6 days. The Action and Limit level of the air quality monitoring is provided in Appendix D.

2.2 Monitoring Equipment

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

Table 2.1 Air Quality Monitoring Equipment

Equipment	Brand and Model
Portable direct reading dust meter (1-hour TSP)	Sibata Digital Dust Monitor (Model No. LD-3 and LD-3B)
High Volume Sampler (24-hour TSP)	Tisch Total Suspended Particulate Mass Flow Controlled High Volume Air Sampler (Model No. TE-5170 & GMW-2310)

2.3 Monitoring Locations

2.3.1 Monitoring locations AM2 and AM3 were set up at the proposed locations in accordance with updated EM&A Manual. However, for monitoring locations: Dynasty View and Tai Po Garden, proposed in the updated EM&A Manual, as approval could not be obtained from the owner's corporation of the premises, baseline and impact air quality monitoring was conducted at 13 Ha Wun Yiu (AM1) and Tai Kwong Secondary School (AM4) respectively. The monitoring station at 13 Ha Wun Yiu (AM1) was relocated to Fan Sin Temple, 3 Sheung Wun Yiu (AM1A) in February 2010. Also, the monitoring station at Tai Kwong Secondary School (AM4) was relocated to 168 Shek Kwu Lung Village (AM4A) in September 2011.

2.3.2 Figure 2.1 shows the locations of monitoring stations. Table 2.2 describes the details of the monitoring stations.

Table 2.2 Locations of Impact Air Quality Monitoring Stations

Monitoring Station	Location	Description
AM1A	3 Sheung Wun Yiu	Ground floor at the boundary outside Fan Sin Temple
AM2	12 Shan Tong New Village	Ground floor outside the premises
AM3	Riverain Bayside	Roof of the switch room
AM4A	168 Shek Kwu Lung Village	Roof of the switch room

2.4 Monitoring Parameters, Frequency and Duration

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

Table 2.3 Air Quality Monitoring Parameters, Frequency and Duration

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

2.5 Monitoring Methodology

2.5.1 24-hour TSP Monitoring

- (a) The HVS was installed in the vicinity of the air sensitive receivers. The following criteria were considered in the installation of the HVS.
- (i) A horizontal platform with appropriate support to secure the sampler against gusty wind was provided.
 - (ii) The distance between the HVS and any obstacles, such as buildings, was at least twice the height that the obstacle protrudes above the HVS.
 - (iii) A minimum of 2 meters separation from walls, parapets and penthouse for rooftop sampler.
 - (iv) A minimum of 2 meters separation from any supporting structure, measured horizontally.
 - (v) No furnace or incinerator flues nearby.
 - (vi) Airflow around the sampler was unrestricted.
 - (vii) Permission was obtained to set up the samplers and access to the monitoring stations.
 - (viii) A secured supply of electricity was obtained to operate the samplers.
 - (ix) The sampler was located more than 20 meters from any dripline.
 - (x) Any wire fence and gate, required to protect the sampler, did not obstruct the monitoring process.
 - (xi) Flow control accuracy was kept within $\pm 2.5\%$ deviation over 24-hour sampling period.
- (b) Preparation of Filter Papers
- (i) Glass fibre filters, G810 were labelled and sufficient filters that were clean and without pinholes were selected.
 - (ii) All filters were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature was around 25 °C and not variable by more than ± 3 °C; the relative humidity (RH) was < 50% and not variable by more than $\pm 5\%$. A convenient working RH was 40%.
 - (iii) All filter papers were prepared and analysed by ALS Technichem (HK) Pty Ltd., which is a HOKLAS accredited laboratory and has comprehensive quality assurance and quality control programmes.
- (c) Field Monitoring
- (i) The power supply was checked to ensure the HVS works properly.
 - (ii) The filter holder and the area surrounding the filter were cleaned.
 - (iii) The filter holder was removed by loosening the four bolts and a new filter, with stamped number upward, on a supporting screen was aligned carefully.
 - (iv) The filter was properly aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter.
 - (v) The swing bolts were fastened to hold the filter holder down to the frame. The pressure applied was sufficient to avoid air leakage at the edges.

- (vi) Then the shelter lid was closed and was secured with the aluminum strip.
- (vii) The HVS was warmed-up for about 5 minutes to establish run-temperature conditions.
- (viii) A new flow rate record sheet was set into the flow recorder.
- (ix) On site temperature and atmospheric pressure readings were taken and the flow rate of the HVS was checked and adjusted at around 1.1 m³/min, and complied with the range specified in the updated EM&A Manual (i.e. 0.6-1.7 m³/min).
- (x) The programmable digital timer was set for a sampling period of 24 hrs, and the starting time, weather condition and the filter number were recorded.
- (xi) The initial elapsed time was recorded.
- (xii) At the end of sampling, on site temperature and atmospheric pressure readings were taken and the final flow rate of the HVS was checked and recorded.
- (xiii) The final elapsed time was recorded.
- (xiv) The sampled filter was removed carefully and folded in half length so that only surfaces with collected particulate matter were in contact.
- (xv) It was then placed in a clean plastic envelope and sealed.
- (xvi) All monitoring information was recorded on a standard data sheet.
- (xvii) Filters were then sent to ALS Technichem (HK) Pty Ltd. for analysis.

(d) Maintenance and Calibration

- (i) The HVS and its accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- (ii) 5-point calibration of the HVS was conducted using TE-5025A Calibration Kit prior to the commencement of baseline monitoring. Bi-monthly 5-point calibration of the HVS will be carried out during impact monitoring.
- (iii) Calibration certificate of the HVSs are provided in Appendix E.

2.5.2 1-hour TSP Monitoring

(a) Measuring Procedures

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

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

(b) Maintenance and Calibration

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

2.6 Monitoring Schedule for the Reporting Month

2.6.1 The schedule for environmental monitoring in January 2013 is provided in Appendix F.

2.7 Monitoring Results

2.7.1 The baseline condition of air quality in the Project site was reviewed in October and November 2009. A baseline monitoring of air quality, in terms of 1-hour Total Suspended Particulates (TSP) and 24-hour TSP, was carried out from 20 October 2009 to 4 November 2009 for 14 days. The baseline monitoring report was submitted by ETL and approved by the ER and the IEC on 9 November 2009. Action Levels for air quality were established and are summarized in Table 2.4, Table 2.5 and Appendix D.

2.8 Results and Observations

2.8.1 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

	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
AM1A	81.4	78.4 – 83.4	302.1	500
AM2	80.6	74.9 – 83.3	301.9	500
AM3	80.9	74.2 – 84.0	301.9	500
AM4A	81.1	74.8 – 84.0	302.3	500

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

	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
AM1A	75.5	57.8 – 116.6	176.6	260
AM2	49.9	15.9 – 86.5	178.6	260
AM3	45.9	30.9 – 64.0	193.1	260
AM4A	88.9	56.6 – 112.7	198.5	260

2.8.2 The major dust source in the reporting period included construction activities from Stage 1 of the Project, as well as nearby traffic emissions.

2.8.3 All 1-hour and 24-hour TSP results were below the Action and Limit Level at all monitoring locations in the reporting month.

2.8.4 The event action plan is annexed in Appendix J.

2.8.5 Weather information including wind speed and wind direction is annexed in Appendix H. The information was obtained from Hong Kong Observatory Sha Tin and Tai Mei Tuk Automatic Weather Station. As some of the weather data in January 2013 from the Tai Mei Tuk Automatic Weather Station were missing, the weather data from Tai Po Automatic Weather Station in January 2013 are included in Appendix H for supplementary purpose.

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 Stage 1 of the Project. The Action and Limit level of the noise monitoring is provided in Appendix D.

3.2 Monitoring Equipment

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

Table 3.1 Noise Monitoring Equipment

Equipment	Brand and Model
Integrated Sound Level Meter	Rion NL-31 / B&k 2238
Acoustic Calibrator	Rion NC-73

3.3 Monitoring Locations

3.3.1 Monitoring stations NM3, NM6 and NM7 were set up at the proposed locations in accordance with updated EM&A Manual. However, for monitoring locations: Tai Po Garden (NM1), Dynasty View (NM2), Hong Kong Teachers' Association Lee Heng Kwei Secondary School (NM4) and Grand Palisades (NM5), proposed in the updated EM&A Manual, impact noise monitoring was conducted at alternative monitoring locations, as approval of access could not be obtained from the owner's corporation of the premises or the principal of the education institutes. The monitoring station at Tai Kwong Secondary School (NM1) was relocated to 168 Shek Kwu Lung Village (NM1A) in September 2011.

3.3.2 Figure 2.1 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
NM1A	168 Shek Kwu Lung Village	1m from the exterior wall of the village house
NM2	38 Ha Wun Yiu	1.2m from the ground floor free-field of the village house
NM3	Wong Shiu Chi Middle School	1m from the exterior of the roof top façade of the New Wing
NM4	Uptown Plaza	1m from the exterior of the roof top façade of Block 4
NM5	The Paragon	1m from the exterior of the roof top façade of the club house
NM6	PLK Tin Ka Ping Primary School	1.2m ground floor free-field near the entrance
NM7	Riverain Bayside	1m from the exterior of the roof façade of the switch room

3.4 Monitoring Parameters, Frequency and Duration

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

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

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

3.5 Monitoring Methodology

3.5.1 Monitoring Procedure

- (a) Façade measurements were made at all monitoring locations, except monitoring stations NM2 and NM6.
- (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 NM2 and NM6.
- (c) The battery condition was checked to ensure the correct functioning of the meter.
- (d) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:-
 - (i) frequency weighting: A
 - (ii) time weighting: Fast
 - (iii) time measurement: $L_{eq(30\text{-minutes})}$ during non-restricted hours i.e. 07:00 – 1900 on normal weekdays; $L_{eq(5\text{-minutes})}$ during restricted hours i.e. 19:00 – 23:00 and 23:00 – 07:00 of normal weekdays, whole day of Sundays and Public Holidays
- (e) Prior to and after each noise measurement, the meter was calibrated using the acoustic calibrator for 94dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1 dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- (f) During the monitoring period, the L_{eq} , L_{10} and L_{90} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- (g) Noise measurement was paused during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible. Observations were recorded when intrusive noise was unavoidable.
- (h) Noise monitoring was cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind with gusts exceeding 10m/s.

3.5.2 Maintenance and Calibration

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

3.6 Monitoring Schedule for the Reporting Month

3.6.1 The schedule for environmental monitoring in January 2013 is provided in Appendix F.

3.7 Monitoring Results

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

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

	Average, dB(A), L_{eq} (30 mins)	Range, dB(A), L_{eq} (30 mins)	Limit Level, dB(A), L_{eq} (30 mins)
NM1A	63.8	63.5 – 64.0	75
NM2	66.6*	63.6 – 67.6*	75
NM3	60.0	54.6 – 63.4	70 [#]
NM4	65.2	59.8 – 67.2	75
NM5	61.5	56.9 – 63.8	75
NM6	61.8*	55.4 – 64.2*	70 [#]
NM7	58.6	57.7 – 59.7	75

*+3dB(A) Façade correction included

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

3.7.2 There was no noise complaint related to 0700 – 1900 hours on normal weekdays was received and followed up by Environmental Team in the reporting period. Hence, no Action Level exceedance was recorded.

3.7.3 No noise monitoring result exceeding the Limit Level was recorded at all monitoring stations in the reporting month.

3.7.4 Major noise sources during the noise monitoring included construction activities of Stage 1 of the Project and nearby traffic noise and general school activities.

3.7.5 The event action plan is annexed in Appendix J.

4 ENVIRONMENTAL SITE INSPECTION AND AUDIT

4.1 Site Inspection

4.1.1 Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for Stage 1 of the Project. In the reporting month, 5 site inspections were carried out on 2, 10, 16, 23 and 30 January 2013 for Contract 1 of the Project, and 5 site inspections for Contract 2 of the Project were carried out on 3, 10, 17, 24 and 31 January 2013.

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

4.1.3 Particular observations during the site inspections for Contract 1 are described below:

Air Quality

4.1.4 Broken concretes were accumulated at Area NB17. The Contractor was reminded to maintain the surface of broken concretes in wet or cover the broken concretes by tarpaulin sheets.

4.1.5 Mud trails were observed at Gate 3. Although, the mud trails were removed by worker immediately, the Contractor should ensure that wheel washing facilities were operating at all vehicular site entrances/exits to wash off the deposited silt on vehicles' wheels and bodies and combine with cleaning of public roads wherever necessary and practical.

Noise

4.1.6 No adverse observation was identified in the reporting month.

Water Quality

4.1.7 Mud trails were observed at Gate 3. Although, the mud trails were removed by worker immediately, the Contractor should ensure that wheel washing facilities were operating at all vehicular site entrances/exits to wash off the deposited silt on vehicles' wheels and bodies and combine with cleaning of public roads wherever necessary and practical.

Chemical and Waste Management

4.1.8 Oil stains were observed on bare ground at Banyan Bridge. The Contractor was reminded to remove the oil stains as soon as possible and handle it as chemical waste.

Landscape and Visual Impact

4.1.9 No adverse observation was identified in the reporting month.

Miscellaneous

4.1.10 No adverse observation was identified in the reporting month.

4.1.11 Particular observations and reminder during the site inspections for Contract 2 are described below:

Air Quality

4.1.12 No dust mitigation measure was provided for broken concrete in Area NLKP10. The Contractor was reminded to provide proper mitigation measures such as provision of water-spraying or covering the broken concrete to provide any fugitive dust generation.

Noise

- 4.1.13 No adverse observation was identified in the reporting month.

Water Quality

- 4.1.14 Mud trails were observed at site entrance G2 and exit of Area LB1SA. Although, the mud trails were removed by worker immediately, the Contractor should ensure that wheel washing facilities were operating at all vehicular site entrances/exits to wash off the deposited silt on vehicles' wheels and bodies and combine with cleaning of public roads wherever necessary and practical.

Chemical and Waste Management

- 4.1.15 C&D wastes were observed accumulated in several site areas. The Contractor was reminded to dispose the C&D wastes regularly and maintain the site cleanliness and tidiness. The Contractor was also reminded to sort the construction waste properly and recycle the sorted construction wastes as regular practice.
- 4.1.16 No label was provided for recycling bin of aluminium's can at Area NLKSA. The Contractor was reminded to label the recycling bin properly.

Landscape and Visual Impact

- 4.1.17 No adverse observation was identified in the reporting month.

Miscellaneous

- 4.1.18 No adverse observation was identified in the reporting month.

4.2 Advice on the Solid and Liquid Waste Management Status

- 4.2.1 The Contract 1 Contractor (CSHK) and the Contract 2 Contractor (GCL) are registered as chemical waste producers for Stage 1 of the Project. 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 Contract 1 Contractor (CSHK), 452m³ of inert C&D material was disposed as public fill to Tuen Mun 38 (of which 1118m³ was broken concrete), while 150m³ of general refuse was disposed at NENT landfill. 159kg of paper/cardboard packaging, 3,139kg of plastics and 48,334kg of metals were collected by recycling contractor in the reporting month. 1,933m³ and 1316m³ of inert C&D materials were reused on site and reused in NENT for backfilling purpose respectively. 0kg chemical waste was collected by licensed contractor in the reporting period.
- 4.2.3 As advised by the Contract 2 Contractor (GCL), 80m³ of inert C&D material were disposed to Tuen Mun 38 and 300m³ general refuse was disposed to NENT landfill in the reporting period. 240,000kg of paper/cardboard packaging were collected by recycling contractor in the reporting month. No chemical waste was collected by licensed contractor in the reporting period.
- 4.2.4 The Contract 1 Contractor (CSHK) and the Contract 2 Contractor (GCL) are advised to maintain on site waste sorting and recording system and maximize reuse / recycle of C&D wastes.

4.3 Environmental Licenses and Permits

- 4.3.1 The environmental licenses and permits for Stage 1 of the Project and valid in the reporting month is summarized in Table 4.1.

Table 4.1 Summary of Environmental Licensing and Permit Status

Statutory Reference	License/ Permit	License or Permit No.	Valid Period		License/ Permit Holder	Remarks
			From	To		
EIAO	Environmental Permit	EP-324/2008/A	31/01/2012	N/A	HyD	Tolo Highway/Fanling Highway between Island House Interchange and Ma Wo
WPCO	Discharge License (Office)	WT00005096-2009	03/12/2009	31/12/2014	CSHK	Discharge at Site Office
	Discharge License (Site)	WT00005445-2009	15/12/2009	31/12/2014	CSHK	Discharge of Construction Runoff
	Discharge License (Office)	WT00006782-2010	25/06/2010	30/06/2015	GCL	Discharge at Site Office
	Discharge License (Site)	WT00007162-2010	09/08/2010	31/07/2015	GCL	Discharge of Construction Runoff
WDO	Chemical Waste Producer Registration	5213-727-C3249-46	25/09/2009	N/A	CSHK	Chemical waste produced in Contract HY/2008/09
		5213-722-G2347-18	18/05/2010	N/A	GCL	Chemical waste produced in Contract HY/2009/08
WDO	Billing Account for Disposal of Construction Waste	7009328	08/09/2009	N/A	CSHK	Waste disposal in Contract HY/2008/09
		7010320	02/03/2010	N/A	GCL	Waste disposal in Contract HY/2009/08
.NCO	Construction Noise Permit	GW-RN0350-12	22/07/2012	13/01/2013	CSHK	Modification of Sign Gantries along Tolo Highway
		GW-RN0351-12	19/07/2012	18/01/2013	CSHK	TB1&2 Construction
		GW-RN0434-12	13/09/2012	16/02/2013	CSHK	Routine Road Maintenance
		GW-RN516-12	24/10/2012	23/04/2013	CSHK	Construction of W4 - NLKRB South Abutment
		GW-RN0550-12	20/11/2012	02/03/2013	CSHK	Road Marking Alternation Banyan West Bridge
		GW-RN0564-12	29/11/2012	30/04/2013	CSHK	Installation of Noise Barrier at Tolo Highway near Yuen Shin Road

Statutory Reference	License/ Permit	License or Permit No.	Valid Period		License/ Permit Holder	Remarks
			From	To		
		GW-RN0565-12	22/11/2012	09/02/2013	CSHK	Bridge 10A Deck Stitching
		GW-RN0566-12	30/11/2012	28/02/2013	CSHK	Works next to MTRC's Tracks
		GW-RN0622-12	28/12/2012	09/03/2013	CSHK	Demolition of Temporary Bridge (TB1&2)
		GW-RN0001-13	06/01/2013	10/03/2013	CSHK	Noise Barrier Installation near Classical Garden
		GW-RN0020-13	03/02/2013	24/03/2013	CSHK	Road Marking Alternation at Tolo Highway near Classical Garden
		GW-RN0024-13	27/01/2013	17/03/2013	CSHK	Road Marking Alternation at Tolo Highway near Tai Po Road to Yuen Chau Tsai
		GW-RN0034-13	29/01/2013	30/06/2013	CSHK	Modification of Sign Gantries (G75)
		GW-RN0043-13	26/01/2013	24/03/2013	CSHK	Road Marking Alternation at Tolo Highway near Slip Road to Tat Wan Road
		GW-RN0040-13	24/01/2013	06/04/2013	CSHK	Pavement and Road Marking Alternation Works at Tolo Highway near Island House Interchange
		GW-RN0029-13	21/01/2013	20/07/2013	CSHK	TB1&2 Construction
		GW-RN0330-12	29/08/2012	28/02/2013	GCL	Tolo Highway and Fanling Highway near Tai Po Tai Wo Road, Lam Kam Interchange & Tai Wo Service Road West
		GW-RN0398-12	27/08/2012	24/02/2013	GCL	Construction fo Bridge 12A at Tolo Highway
		GW-RN0493-12	15/10/2012	14/04/2013	GCL	Construction of Bridge 15A
		GW-RN0529-12	04/11/2012	28/04/2013	GCL	New Lam Kan Bridge Pier 4 and 5

Statutory Reference	License/ Permit	License or Permit No.	Valid Period		License/ Permit Holder	Remarks
			From	To		
		GW-RN0546-12	20/11/2012	28/02/2013	GCL	Removal of Existing Sign Gantry (Nsn45) at Fanling Highway
		GW-RN0551-12	16/11/2012	09/03/2013	GCL	Slip Road of Tai Po Tai Wo Road to Tolo Highway
		GW-RN0602-12	28/12/2012	28/05/2013	GCL	Erection of Overhead Falsework Between NLKP9 and NLKP10

4.4 Implementation Status of Environmental Mitigation Measures

- 4.4.1 In response to the site audit findings, the Contractors carried out corrective actions.
- 4.4.2 A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in Appendix C. Most of the necessary mitigation measures were implemented properly.

4.5 Summary of Exceedances of the Environmental Quality Performance Limit

- 4.5.1 All 1-hour and 24-hour TSP monitoring results complied with the Action / Limit Levels in the reporting period.
- 4.5.2 For construction noise, no Action and Limit Level exceedance was recorded at all monitoring stations in the reporting period.

4.6 Summary of Complaints, Notification of Summons and Successful Prosecutions

- 4.6.1 The Environmental Complaint Handling Procedure is annexed in Figure 4.1.
- 4.6.2 There were two (2) follow-up complaints (included two (2) noise related complaints) investigated by Environmental Team in January 2013.
- 4.6.3 There were three (3) complaints (included one (1) air related complaint, one (1) noise related complaint and one (1) water related complaint followed up by the Environmental Team in January 2013.
- 4.6.4 The (1st) follow-up noise complaint, was received by EPD on 24 December 2012, and referred from EPD in the same day. EPD referred a complaint about hammering noise generated from construction activities at the construction site for bridge construction at Lam Kam Road and Tai Wo Service Road West (near Wai Tau Tsuen) during the period from 00:00 to 06:00 in the recent two weeks caused nuisance to nearby residents. The complainant called the Police before. However, the police expressed that as Construction Noise Permit (CNP) had been issued by EPD for the construction works, the complaint could not be handled by the Police and requested the complainant contacted EPD for help. The complainant strongly dissatisfied that EPD issued the CNP for the construction works and no government staff had been seen to monitor the noise. The complainant opposed the related CNP and strongly requested to reply and follow-up as soon as possible. The complainant expressed if the construction works were still carried out at night time again, he would lodge the complaint to the Director and he would contact the Media immediately for reporting.

According to the information of the Contractor (Gammon Construction Ltd.) and confirmed by the Engineer, loading and unloading works, lifting & welding steel beams, placing of concrete blocks,

Inserting timber and plywood between steel beams and inserting hand railing & tarpaulin were carried out at Lam Kam Road and Tai Wo Service Road West (near Wai Tau Tsuen) during the period between 01:00 – 05:00 on 11, 12, 13, 14, 15, 18, 19, 20, 21 & 22 December 2012 (ten nights). A valid Construction Noise Permit (CNP no.: GW-RN0549-12) was obtained for the use of Powered Mechanical Equipments (PMEs) and carrying out of Prescribed Construction work (PCW) for bridge construction at Lam Kam Road and Tai Wo Service Road West (near Wai Tau Tsuen) in restrict hours (01:00 – 05:00 in weekday). All PMEs and PCW were carried out between 01:00 – 05:00 in these ten nights. The numbers and types of PMEs operated on the dates were complied with the CNP. No PME was operated and no PCW were carried out (under CNPs - GW-RN0330-12, GW-RN0433-12, GW-RN0523-12 and GW-RN0546-12) in the same period. PMEs and PCW were only operated / carried in the ten weekday nights and therefore the construction activities complied with the conditions of CNP (CNP no.: GW-RN0549-12). Mobile cranes were equipped with appropriate noise control measures as stated in the CNP. Site logs (by the Contractor), site surveillance reports (by the Engineer), list of plants used during the construction works (provided by the Contractor and confirmed by the Engineer) for these ten nights were also checked for verification. Photo records for noise control measure of mobile crane were also taken for reference. In accordance with the observation of site inspection (by ET) on 27 December 2012, 3 January 2013, 10 January 2013, permanent noise barrier and temporary noise barrier were implemented near the work areas (along the Wai Tau Tsuen) as a noise mitigation measure. However, the noise complaint was considered as project-related. The Contractor is advised to implement the mitigation measures below:

- Strictly comply with the requirements of the approved CNP for works carried out in restricted hours;
- Better scheduling of works to minimize noise nuisance;
- Instruct the site workers to keep the noise in minimum during construction works in restricted hours; and
- Foster better public relations with the sensitive receivers nearby.

4.6.5 The (2nd) follow-up noise complaint, was received by EPD on 24 December 2012, and referred from EPD in the same day. EPD referred a complaint about noise nuisance generated from construction activities, at the construction site for bridge construction between Lam Kam Road and Tai Wo Service Road West at mid-night on Monday to Friday and ongoing for two weeks, caused nuisance to Wai Tau Tsuen. The complainant called the Police before and found out the related Construction Noise Permit (CNP) in EPD's website. However, the complainant did not provide the reference number of the CNP. The Complaint requested the Highways Department to stop the construction works as soon as possible.

According to to the information of the Contractor (Gammon Construction Ltd.) and confirmed by the Engineer, loading and unloading works, lifting & welding steel beams, placing of concrete blocks, Inserting timber and plywood between steel beams and inserting hand railing & tarpaulin were carried out at Lam Kam Road and Tai Wo Service Road West (near Wai Tau Tsuen) during the period between 01:00 – 05:00 on 11, 12, 13, 14, 15, 18, 19, 20, 21 & 22 December 2012 (ten nights). A valid Construction Noise Permit (CNP no.: GW-RN0549-12) was obtained for the use of Powered Mechanical Equipments (PMEs) and carrying out of Prescribed Construction work (PCW) for bridge construction at Lam Kam Road and Tai Wo Service Road West (near Wai Tau Tsuen) in restrict hours (01:00 – 05:00 in weekday). All PMEs and PCW were carried out between 01:00 – 05:00 in these ten nights. The numbers and types of PMEs operated on the dates were complied with the CNP. No PME was operated and no PCW were carried out (under CNPs - GW-RN0330-12, GW-RN0433-12, GW-RN0523-12 and GW-RN0546-12) in the same period. PMEs and PCW were only operated / carried in the ten weekday nights and therefore the construction activities complied with the conditions of CNP (CNP no.: GW-RN0549-12). Mobile cranes were equipped with appropriate noise control measures as stated in the CNP. Site logs (by the Contractor), site surveillance reports (by the Engineer), list of plants used during the construction works (provided by the Contractor and confirmed by the Engineer) for these ten nights were also checked for verification. Photo records for noise control measure of mobile crane were also taken for reference. In accordance with the observation of site inspection (by ET) on 27 December 2012, 3 January 2013, 10 January 2013, permanent noise barrier and temporary noise barrier were implemented near the work areas (along the Wai Tau Tsuen) as a noise mitigation measure. However, the noise complaint was considered as project-related. The Contractor is advised to implement the mitigation measures below:

- Strictly comply with the requirements of the approved CNP for works carried out in restricted hours;

- Better scheduling of works to minimize noise nuisance;
- Instruct the site workers to keep the noise in minimum during construction works in restricted hours; and
- Foster better public relations with the sensitive receivers nearby.

4.6.6 An air complaint (from a resident of Ma Wo at Tai Po), was received by EPD on 14, 17, 21, December 2012 as well as 7 and 15 January 2013, and referred from EPD in the same days. The complaint was about dust emission in construction site of the Tolo Highway widening construction works at Ma Wo. The complainant contacted the Contractor (Gammon Construction Ltd.) on 14 December 2012 and the Contractor promised that water-spraying would be provided at the entrance of the construction site. Although the complainant waited for 5 hours, no water-spraying was provided by the Contractor. Fugitive dust was generated and caused serious nuisance to the complainant's dwelling.

Subsequently, the complainant made another call on 17 December 2012 saying that an EPD personnel contacted him in the morning on 17 December 2012. However, still no water-spraying was provided by the Contractor in the construction site on 17 December 2012. Fugitive dust generated overwhelmed the entrance of complainant's dwelling. The complainant thereby requested the EPD to follow-up and reply the complainant as soon as possible.

Afterwards, the complainant also made other call on 21 December 2012 strongly complaining that there are no water-spraying provided in the construction site as requested by EPD and caused continuous dust nuisance to the complainant.

Afterward, the complainant made a call on 7 January 2013 complained about dust emission from construction site of the Tolo Highway widening construction works at Ma Wo and cause nuisance, pollution problem have been observed over two years and the condition were most serious specially on Saturday and Sunday. The Complainant requested EPD and the Contractor to follow-up.

In addition, the complainant made another call on 15 January 2013 complained that the odour from asphalt paving works in the construction site nearby the complainant's dwelling at Ma Wo and caused serious nuisance. The complainant requested reply and follow-up.

As informed by the Contractor (Gammon Construction Ltd) and confirmed by the Engineer of the Project, rebar fixing at NB31 on 14 December 2012 (Friday); formwork erection and concreting at NB31 on 17 December 2012 (Thursday); general fill & compaction at NB31 on 21 December 2012 (Friday); scarifying CJ, erecting formwork, rebar fixing, general fill & soil compaction at NB31 on 22 December 2012 (Saturday); general cleaning and concreting at NB31 on 29 December 2012 (Saturday); general fill, compaction, general cleaning and concreting at NB31 on 5 Jan 2013 (Saturday); laying of base course bitumen, trimming and compaction of sub-base material near work areas W38 to W48 (Chainage approximately 2500 – 2700) on 15 January 2013 (Tuesday) were being carried out at the work areas nearby the residential flat of the complainant (shown in Figure 1 – Site Layout near Ma Wo at Tai Po). There were no construction activities conducted on Sunday (including 23 December 2012, 30 December 2012 and 6 Jan 2013) and only general site clearance (e.g. sweeping & washing floor) was conducted on 30 December 2012 & 6 January 2013 and no Powered Mechanical Equipment (PME) was involved or operated for the cleaning works on Sunday. According to information provided by Contractor and confirmed by the Engineer of the Project, the temporary bitumen paving work at Northbound carriageway near W38-W45 was completed on 19 January 2013.

Mitigation measures, including erection of tarpaulin dust screen along the work areas W44-NB31, water spraying by workers and automatic sprinkler system for haul roads and exposed slopes, covering non-working slopes by tarpaulin sheets within work areas, covering of dusty materials carrying in dump trucks within work areas W45-47 were taken by the Contractor. Besides, environmental supervisions (by the Contractor's foremen) were conducted everyday to review the adequacy and effectiveness of dust suppression measure at work areas. Checklists of the Contractor's environmental supervision were checked for verification. Notice board was also erected at site boundary to write down daily dusty activities (e.g. rock breaking, excavation, grouting and backfilling etc) / activities with odour emission (e.g. laying of base course bitumen) carried out within work areas W38 – W48, NB31 for notification / information to Ma Wo's residents.

With reference to the monitoring results recorded on days near to the day of complaint at the nearest EM&A monitoring station (AM1A- Sheung Wun Yiu), the 24-hour TSP level on 12, 18, 24, 29 December 2012, 2 and 8 January 2013 were found to be 58.3ug/m³, 27.3ug/m³, 70.5ug/m³, 20.2ug/m³, 60.2ug/m³, 116.6ug/m³ respectively, which were below the action level of 176.6 ug/m³

Nevertheless, the complaint was considered as project-related. Therefore, the Contractor is reminded to enhance the dust mitigation as below:

- Confirm the implementation of dust mitigation measures (erection of tarpaulin dust screen along the work areas W44-NB31, spraying water by manual worker / sprinkler systems for the haul roads and exposed slopes at work areas W44-NB31, covering non-working slopes by tarpaulin sheets within work areas, covering of dusty materials carrying in dump trucks within work areas W45-47) during all construction / dusty activities to prevent any fugitive dust generation;
- Increase the frequency of watering in the work areas (specially in the entrance of the construction site, site haul roads and exposed slopes / areas in the work areas W44-NB31) to maintain the surface of site haul roads and exposed surfaces in wet condition.
- Cover the backfilling surface after work;
- Maintain soil surface wet before loading and unloading activities;
- Maintain the frequency of the environmental supervision (by the Contractor) to regular review the adequacy and effectiveness of dust suppression measures to suit the construction progress;
- Inform the complainant before dusty activities to be carried out, such as rock breaking, excavation, grouting and backfilling etc; and
- Foster better public relations with the sensitive receivers / the complainant nearby.

During site inspection on 24 January 2013, backfilling activity was observed in work area W45. No laying work of base course bitumen at W38 – W45 was observed. Several mitigation measures were implemented at the work area W38-47:

- Dust screen was erected along at the work area W44-NB31;
- Impermeable sheet was erected in backfilling area at W47;
- Automatic sprinklers were operated for watering of site haul roads / site areas;
- Water spraying for site haul roads / site areas was provided by worker
- Haul road at work area NB31 was paved and noise barriers were erected act as a dust screen;
- Site haul road / site areas were dampened;
- Maintain soil surface wet during the backfilling activities
- Dusty materials carrying in dump trucks was covered within work areas W45-47;
- Non-working slopes was properly covered by tarpaulin sheets; and
- Notice board was erected at site boundary to write down daily dusty activities / activities with odour emission carried out within work areas W38 – W48, NB31 for notification / information to Ma Wo's residents.

Besides, the Contractor's site logs of environmental supervision and records of communication between the Contractor and Ma Wo's residents were also checked. Dust suppression measures were provided at work areas W38-48 and the deficiencies were also rectified properly. No fugitive dust arising from the work area W38-48 was observed.

- 4.6.7 A noise complaint (from a resident of Ha Wun Yiu at Tai Po), was received by EPD on 11 January 2013 and referred from EPD in the same day. According to complainant "C", the complainant's dwelling located at Ha Wun Yiu Village was very close to Tolo Highway. The complainant expressed that the road surface of Tolo Highway was uneven. When heavy vehicle passed through the road, strong sound and noise, like explosion, were produced. The noise seriously affected the complainant. Although the complainant had complained this issue to Highways Department before, noise barriers were still not installed and no improvement was observed. The complaint requested

According to the information provided by the Contractor (China State Construction Engineering (HK) Ltd.) and confirmed by the Engineer of the Project, no construction activities were conducted over the road surface of Tolo Highway Northbound at Western End of Bridge 10 and West Abutment (near the complainant's dwelling) on 11 January 2013. According to the updated construction programme (provided by the Contractor), noise barriers installation work (1st half from east end & 2nd half to west

end) of Tolo Highway (near the complainant's dwelling) will be tentatively commenced on 16 July 2013 and 7 August 2013 respectively.

With reference to the noise monitoring results recorded on days near to the day of complaint at the nearest EM&A monitoring station (NM2 – 10 Ha Wun Yiu), the noise level (Leq 30mins) on 8 January 2013 and 14 January 2013 were found to be 67.3dB(A) and 67.6dB(A) respectively, which were below the limit level of 75dB(A).

Upon the complaint details and our investigation, the noise mentioned in the complaint was considered due to traffic noise and was not related to the noise from construction activities. Therefore, the noise complaint was considered as non project-related.

- 4.6.8 A water complaint, was received by Highway on 28 January 2013, and referred from Highway on 30 January 2013. The complaint was about muddy water discharged from construction site nearby Tai Wo Estate to Lam Tsuen River on 26 January 2013 and contaminated the river water, the contaminated river water would pass flow to Tolo harbour. The complaint was still under investigation in January 2013 and the investigation result will be reported in next Monthly EM&A Report (February 2013).
- 4.6.9 No notification of summons and prosecution was received in the reporting period.
- 4.6.10 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 1 in February 2013 will be:-

- Temporary shoring, sheetpiling and excavation;
- Pile cap construction (Noise Barrier);
- Installation of soil nails;
- At-grade road construction;
- Widening and demolition of central dividers;
- Retaining wall construction;
- Bridge deck construction;
- Noise barrier footing construction;
- Noise barrier panels installation;
- Asphalt laying;
- Installation of drainage pipes;
- Modification of edge coping; and
- Pre-bored socket H-pile.

5.1.2 The major construction works for Contract 2 in February 2013 will be:-

- Condition survey of existing structures;
- Excavation of trial trenches to locate existing utilities;
- Construction of haul road;
- Extension of box culvert and subway;
- Construction of haul road;
- Structural works of bridges;
- Construction of pilecap / spread footing of noise barrier / semi noise enclosure;
- Slope works, including installation of soil nails;
- Retaining wall construction;
- Noise barrier construction;
- Modification /demolition of existing bridge structures;
- Entrusted watermains works; and
- Sewer Installation.

5.2 Key Issues for the Coming Month

5.2.1 Key issues to be considered in February 2013:-

- Properly store and label oils and chemicals on site;
- Chemical, chemical waste and waste management;
- Collection of construction waste should be carried out regularly;
- Site runoff should be properly collected and treated prior to discharge;
- 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;
- Suppress dust generated from excavation, breaking and drilling activities, haul road traffic and grout mixing process;
- Quieter powered mechanical equipment should be used;
- Closely check and replace the sound insulation materials wrapped at the concrete breaker tip regularly;
- Better scheduling of construction works to minimize noise nuisance; 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 February 2013 is provided in Appendix F.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

- 6.1.1 The construction phase and EM&A programme of Stage 1 of the project commenced on 23 November 2009.
- 6.1.2 1-hour TSP, 24-hour TSP and noise monitoring were carried out in the reporting period.
- 6.1.3 All 1-hour and 24-hour TSP monitoring results complied with the Action / Limit Levels in the reporting period.
- 6.1.4 No Action and Limit Level exceedance for construction noise was recorded at all monitoring stations in the reporting month.
- 6.1.5 Environmental site inspection was carried out 10 times in January 2013. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site audits.
- 6.1.6 There were three (2) complaints (included two (2) noise related complaints) received in December 2012 and followed up by Environmental Team in January 2013. Investigations were carried out and the findings and proposed mitigation measures were submitted to all relevant parties.
- 6.1.7 There were three (3) complaints (included one (1) air related complaint, one (1) noise related complaint and one (1) water related complaint followed up by the Environmental Team in January 2013. For the air related complaint, follow-up site inspection was conducted on 24 January 2013 (by ET) to confirm the implementation of mitigation measure for an air complaint received by EPD on 7 January 2013. For the noise related complaint, the noise mentioned in the complaint was considered due to traffic noise and was not related to the noise from construction activities. Therefore, the noise complaint was considered as non project-related. For the water related complaint, the complaints were still under investigation in January 2013 and the investigation result will be reported in next Monthly EM&A Report (February 2013).
- 6.1.8 No notification of summons and prosecution was received in the reporting period.

6.2 Recommendations

- 6.2.1 According to the environmental site inspections performed in the reporting month, the following recommendations were provided:-

Air Quality Impact

- All plants on site should be properly maintained to avoid dark smoke emission.
- All vehicles should be washed to remove any dusty materials before leaving the site.
- Haul roads should be sufficiently dampened to minimize fugitive dust generation.
- Wheel washing facilities should be properly maintained to ensure properly functioning.
- Temporary exposed slopes and open stockpiles should be properly covered.
- Enclosure should be erected for cement mixing operations.
- Provide water spraying to suppress fugitive dust for any dusty construction activity.

Construction Noise Impact

- Properly erect the temporary noise barriers in accordance with the Environmental Permit requirement.
- Noise barriers should be closely packed and properly aligned to ensure effective noise reduction.
- Noisy operations should be oriented to a direction away from sensitive receivers as far as possible.

- Sound insulation materials shall be wrapped at the breaker tip for concrete breaking works.
- Noise Emission Label (NEL) shall be affixed to the air compressor and hand-held breaker operating within works area.
- Better scheduling of construction works to minimize noise nuisance.

Water Quality Impact

- Silt, debris and leaves accumulated at public drains, wheel washing bays and perimeter u-channels and desilting facilities should be cleaned up regularly.
- Silty effluent should be treated/desilted before discharged. Untreated effluent should be prevented from entering public drain channel.
- Proper drainage channels/bunds should be provided at the site boundaries to collect/intercept the surface run-off from works areas.
- Exposed slopes and stockpiles should be covered up properly during rainstorm.
- Stagnant water accumulated within works area should be removed.

Chemical and Waste Management

- C&D materials and wastes, general refuse should be sorted properly and removed timely.
- All chemical containers and oil drums should be properly stored.
- All plants and vehicles on site should be properly maintained to prevent oil leakage.
- All drain holes of the drip trays utilized within works areas should be properly plugged to avoid any oil leakage.
- Oil stains on soil surface and empty chemical containers should be cleared and disposed of as chemical waste.

Landscape and Visual Impact

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