

**Highways Department**

Agreement No. CE 20/2009 (EP)

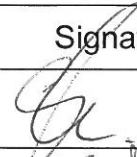

**Environmental Team for the Widening of  
Tolo Highway / Fanling Highway between  
Island House Interchange and Fanling**

**(Stage 1)**

**Between Island House Interchange and  
Tai Hang - Investigation**

**Annual EM&A Review Report  
for November 2010 - October 2011**

[12/2011]

|                      | Name      | Signature   |
|----------------------|-----------|---|
| Prepared & Checked:  | Cyrus Lau |  |
| Reviewed & Approved: | Y T Tang  |  |

Version: Rev. 1 Date: 2 December 2011

**Disclaimer**

This report is prepared for Highways Department and is given for its sole benefit in relation to and pursuant to 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 and may not be disclosed to, quoted to or relied upon by any person other than Highways Department without our prior written consent. No person (other than Highways Department) into whose possession a copy of this report comes may rely on this report without our express written consent and Highways Department may not rely on it for any purpose other than as described above.

AECOM Asia Co. Ltd.  
11/F, Grand Central Plaza, Tower 2, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong  
Tel: (852) 3105 8686 Fax: (852) 2317 7609 www.aecom.com



Our ref AFK/TK/am/T264022/22.01/L-0088

T 2828 5919

E terence.kong@mottmac.com.hk

Your ref

Hyder Consulting Limited  
47/F Hopewell Centre,  
183 Queen's Road East,  
Wanchai,  
Hong Kong.

5 December 2011

By Fax (2805 5028) and Post

**Attn.: Mr. Tony Wong**

Dear Sir,

**Widening of Tolo Highway between  
Island House Interchange and Tai Hang  
Environmental Permit No.: EP-324/2008  
Condition 3.3 – Submission of Annual EM&A Review Report for November 2010 to  
October 2011 (Stage 1)**

We refer to the captioned Annual EM&A Review Report received on 21 November and 2 December 2011 submitted by ET via email. Pursuant to EP Condition 3.3, I hereby verify the Annual EM&A Review Report for November 2010 to October 2011 (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  
ETL, AECOM – Mr. Y T Tang

(Fax: 2761 4864)

(Fax: 2317 7609)

## TABLE OF CONTENTS

|   | Page |
|---|------|
| EXECUTIVE SUMMARY   | 1    |
| 1 INTRODUCTION  | 3    |
| 2 ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS                                 | 5    |
| 3 AIR QUALITY MONITORING  | 7    |
| 4 CONSTRUCTION NOISE MONITORING   | 9    |
| 5 ENVIRONMENTAL SITE INSPECTION AND AUDIT   | 11   |
| 6 SUMMARY AND REVIEW OF NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY | 15   |
| 7 ENVIRONMENTAL COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS   | 15   |
| 8 REVIEW OF THE VALIDITY OF THE EIA/ERR PREDICTION                                | 17   |
| 9 REVIEW OF ENVIRONMENTAL IMPLEMENTATION STATUS                                   | 17   |
| 10 REVIEW OF EM&A PROGRAMME   | 17   |
| 11 CONCLUSIONS  | 17   |

### List of Tables

|           |   |
|-----------|---|
| Table 1.1 | Contact Information of Key Personnel                                      |
| Table 3.1 | Locations of Impact Air Quality Monitoring Stations                       |
| Table 3.2 | Summary of Number of Monitoring Events for 1-hr & 24-hr TSP Concentration |
| Table 3.3 | Summary of Number of Exceedances for 1-hr & 24-hr TSP Monitoring          |
| Table 4.1 | Locations of Impact Noise Monitoring Stations                             |
| Table 4.2 | Summary of Number of Monitoring Events for Construction Noise             |
| Table 4.3 | Summary of Number of Monitoring Exceedances for Construction Noise        |

### Figures

|            |                             |
|------------|-----------------------------|
| Figure 1.1 | General Project Layout Plan |
| Figure 2.1 | EM&A Monitoring Locations   |

### List of Appendices

|            |   |
|------------|---|
| Appendix A | Project Organization Structure  |
| Appendix B | Implementation Schedule of Environmental Mitigation Measures (EMIS)                       |
| Appendix C | Summary of Action and Limit Levels  |
| Appendix D | Graphical Presentation of Impact Air Quality Monitoring Results                           |
| Appendix E | Graphical Presentation of Impact Daytime Construction Noise Monitoring Results            |
| Appendix F | Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions |

## 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). 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 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 November 2010 and 31 October 2011.

As informed by the Contract 1 Contractor (China State Construction Engineering (Hong Kong) Ltd.), construction activities in the reporting period included:

- Temporary shoring, sheetpiling and excavation;
- Bored piling;
- Pre-bored H-piles construction;
- Pipe pile wall construction;
- Pile cap construction;
- Bridge construction;
- Tree felling and transplanting of trees;
- At-grade road construction;
- Demolition of existing central dividers;
- Demolition of existing bridges;
- Retaining wall construction;
- Slope works;
- Site investigation;
- Installation of noise barrier;
- Road paving;
- Bridge Jacking;
- Soil Nails Works;
- Noise Barrier Footing Construction and Panel Installation; and
- Drainage works.

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

- Condition survey of existing structures;
- Excavation of trial trenches to locate existing utilities;
- Ground investigation and predrilling;
- Construction of haul road;
- Extension of box culvert and subway;
- Piling and structural works of bridges;
- Piling and pile cap of bridges;
- Construction of pile cap / spread footing of noise barrier / semi noise enclosure;
- Slope works, including installation of soil nails;
- Retaining wall construction;
- Noise barrier construction;

- Modification of existing bridge structures;
- Entrusted watermains works; and
- Sewer Installation.

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

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

### **Breaches of Action and Limit Levels for Noise**

No Action/Limit Level exceedance of construction noise monitoring was recorded in the reporting period.

There were three (3) noise related complaints followed up by Environmental Team in the reporting period. Investigations were carried out. The findings and the proposed mitigation measures were submitted to all relevant parties. Summary of investigation is described in Section 7.1.

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

Four (4) environmental complaints were followed up by Environmental Team in the reporting period. Investigations were carried out. The findings and the proposed mitigation measures were submitted to all relevant parties. Summary of investigation is described in Section 7.1.

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

## 1 INTRODUCTION

### Background

- 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 Hong Kong Island 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.
- 1.2. 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.
- 1.3. The Project is a designated project and is governed by an Environmental Permit (EP-324/2008)(EP).
- 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.
- 1.5. 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.
- 1.6. 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.
- 1.7. Hyder-Arup-Black and Veatch Joint Venture (HABVJV) are appointed by Highways Department 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).
- 1.8. China State Construction Engineering (Hong Kong) Ltd. (CSCE) 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.
- 1.9. AECOM Asia Co. Ltd. was employed by Highways Department as the Environmental Team to undertake the 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.
- 1.10. The construction phase of Stage 1 under the EP commenced on 23 November 2009.
- 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.

### Scope of Report

- 1.12. This is the second Annual Environmental Monitoring and Audit (EM&A) Review 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 from 1 November 2010 to 31 October 2011.

### Project Organization

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

**Table 1.1 Contact Information of Key Personnel**

| Party   | Position                          | Name                                 | Telephone | Fax       |
|---|-----------------------------------|--------------------------------------|-----------|-----------|
| <b>ER</b> of Stage 1, Contract 1<br>(Hyder-Arup-Black & Veatch Joint Venture)                       | Chief Resident Engineer /TOLO1    | James Tsang                          | 9038 8797 | 26674000  |
| <b>ER</b> of Stage 1, Contract 2<br>(Hyder-Arup-Black & Veatch Joint Venture)                       | Chief Resident Engineer /TOLO2    | Paul Appleton                        | 9097 5833 | 2653 2348 |
| <b>IEC</b> of Stage 1<br>(Mott MacDonald Hong Kong Ltd.)  | Independent Environmental Checker | Terence Kong                         | 2828 5919 | 2827 1823 |
| <b>Contractor</b> of Stage 1, Contract 1<br>(China State Construction Engineering (Hong Kong) Ltd.) | Site Agent                        | David Lau (1 Nov 2010 - 4 Sep 2011)  | 9499 0818 | 2667 5666 |
|   |                                   | S Y Tse (5 September 2011 - to date) | 9078 0458 | 2667 5666 |
|   | Environmental Officer             | Michael Tsang                        | 9277 4956 | 2667 5666 |
| <b>Contractor</b> of Stage 1, Contract 2<br>(Gammon Construction Ltd.)                              | Site Agent                        | Edmond Chan                          | 9483 8885 | 2559 3410 |
|   | Environmental Officer             | Ir Thomson Chang                     | 9213 6569 | 2559 3410 |
| <b>ET</b> of Stage 1<br>(AECOM)   | ET Leader                         | Y T Tang                             | 3922 9393 | 2891 0305 |

### Summary of Construction Works

1.14. The construction phase of Stage 1 under the EP commenced on 23 November 2009. Details of the construction works carried out by the Contract 1 Contractor (CSCE) in this reporting period are listed below:

- Temporary shoring, sheetpiling and excavation;
- Bored piling;
- Pre-bored H-piles construction;
- Pipe pile wall construction;
- Pile cap construction;
- Bridge construction;
- Tree felling and transplanting of trees;
- At-grade road construction;
- Demolition of existing central dividers;
- Demolition of existing bridges;
- Retaining wall construction;
- Slope works;
- Site investigation;
- Installation of noise barrier;
- Road paving;
- Bridge jacking;
- Soil nails works;
- Noise barrier footing construction and panel installation; and
- Drainage works.

1.15. The construction works carried out by the Contract 2 Contractor (GCL) in the reporting period were:

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

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

1.17. The environmental mitigation measures implementation schedule (EMIS) are presented in Appendix B.

## 2 ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

### Monitoring Parameters

2.1. The updated EM&A Manual designated 4 air quality monitoring stations and 7 noise monitoring stations to monitor environmental impacts on air quality and noise due to Stage 1 of the Project.

2.2. For air quality, monitoring locations AM2 (Shan Tong New Village) and AM3 (Riverain Bayside) 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, impact air quality monitoring was conducted at alternative monitoring locations: AM1 (Ha Wun Yiu) and AM4 (Tai Kwong Secondary School). 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. For noise, monitoring stations NM3 (Wong Shiu Chi Middle School), NM6 (PLK Tin Ka Ping Primary School) and NM7 (Riverain Bayside) were set up at the proposed locations in accordance with updated EM&A Manual. However, for monitoring locations: Tai Po Garden, Dynasty View, Hong Kong Teachers' Association Lee Heng Kwei Secondary School and Grand Palisades, proposed in the updated EM&A Manual, as approval of access could not be obtained from the owner's corporation of the premises or the principal of the education institutes, impact noise monitoring was conducted at alternative monitoring locations: NM1 (Tai Kwong Secondary School), NM2 (Ha Wun Yiu), NM4 (Uptown Plaza) and NM5 (The Paragon). The monitoring station at Tai Kwong Secondary School (NM1) was relocated to 168 Shek Kwu Lung Village (NM1A) in September 2011.
- 2.4. The monitoring locations used during the reporting period are depicted in Figure 2.1.
- 2.5. The updated EM&A Manual also required environmental site inspections for air quality, noise, water quality, chemical, waste management, ecology and landscape and visual impact.

#### **Environmental Quality Performance Limits (Action/Limit Levels)**

- 2.6. The environmental quality performance limits (i.e. Action/Limit Levels) of air quality monitoring were derived from the baseline air quality monitoring results at the respective monitoring stations (AM1, AM2, AM3 and AM4), while the environmental quality performance limits of noise monitoring were defined in the EM&A Manual.
- 2.7. The environmental quality performance limits of air quality and noise monitoring are given in Appendix C.

#### **Environmental Mitigation Measures**

- 2.8. Relevant environmental mitigation measures were stipulated in the Particular Specification and EP (EP-324/2008) for the Contractor to adopt. A list of environmental mitigation measures and their implementation statuses are given in Appendix B.

### 3 AIR QUALITY MONITORING

- 3.1. Air quality monitoring, including 1-hour and 24-hour TSP, was conducted at least 3 times every 6 days and at least once every 6 days respectively at the 4 monitoring stations, in accordance with the updated EM&A Manual.
- 3.2. Figure 2.1 shows the locations of monitoring stations used during the reporting period. Table 3.1 describes the details of the monitoring stations.

**Table 3.1 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 premise                    |
| AM3                | Riverain Bayside           | Roof of the switch room                             |
| AM4*               | Tai Kwong Secondary School | Roof of the school                                  |
| AM4A*              | 168 Shek Kwu Lung Village  | Roof of the switch room                             |

\* AM4 1-hr and 24-hr TSP monitoring station was relocated to AM4A on 1 September 2011.

- 3.3. The weather was mostly sunny with several cloudy periods within the reporting period. Also, occasional downpours were noted between May 2011 and July 2011. The major dust source in the reporting period included construction activities from Stage 1 of the Project, as well as nearby traffic emissions.
- 3.4. The number of monitoring events and exceedances recorded in each month of the reporting period are presented in Table 3.2 and Table 3.3 respectively.

**Table 3.2 Summary of Number of Monitoring Events for 1-hr & 24-hr TSP Concentration**

| Monitoring Parameter | Location | No. of monitoring events |
|----------------------|----------|--------------------------|
|                      |          | Nov 10 – Oct 11          |
| 1-hr TSP             | AM1A     | 192                      |
|                      | AM2      | 192                      |
|                      | AM3      | 192                      |
|                      | AM4*     | 162                      |
|                      | AM4A*    | 30                       |
| 24-hr TSP            | AM1A     | 64                       |
|                      | AM2      | 64                       |
|                      | AM3      | 64                       |
|                      | AM4*     | 54                       |
|                      | AM4A*    | 10                       |

\* AM4 1-hr and 24-hr TSP monitoring station was relocated to AM4A on 1 September 2011.

**Table 3.3 Summary of Number of Exceedances for 1-hr & 24-hr TSP Monitoring**

| Monitoring Parameter | Location | Level of Exceedance | Level of Exceedance |          |
|----------------------|----------|---------------------|---------------------|----------|
|                      |          |                     | Nov 10 – Oct 11     |          |
| 1-hr TSP             | AM1A     | Action              | 0                   |          |
|                      |          | Limit               | 0                   |          |
|                      | AM2      | Action              | 0                   |          |
|                      |          | Limit               | 0                   |          |
|                      | AM3      | Action              | 0                   |          |
|                      |          | Limit               | 0                   |          |
|                      | AM4*     | Action              | 0                   |          |
|                      |          | Limit               | 0                   |          |
|                      | AM4A*    | Action              | 0                   |          |
|                      |          | Limit               | 0                   |          |
|                      |          |                     | <b>Total</b>        | <b>0</b> |

|           |       |              |   |
|-----------|-------|--------------|---|
| 24-hr TSP | AM1A  | Action       | 0 |
|           |       | Limit        | 0 |
|           | AM2   | Action       | 0 |
|           |       | Limit        | 0 |
|           | AM3   | Action       | 0 |
|           |       | Limit        | 0 |
|           | AM4*  | Action       | 0 |
|           |       | Limit        | 0 |
|           | AM4A* | Action       | 0 |
|           |       | Limit        | 0 |
|           |       | <b>Total</b> | 0 |

\* AM4 1-hr and 24-hr TSP monitoring station was relocated to AM4A on 1 September 2011.

- 3.5. All 1-hour and 24-hour TSP results were below the Action and Limit Level at all monitoring locations in the reporting period.
- 3.6. The graphical plots of the impact air quality monitoring results are provided in Appendix D.

#### 4 CONSTRUCTION NOISE MONITORING

- 4.1. Construction noise monitoring was conducted at 7 monitoring stations for at least once per week during 07:00 – 19:00 in the reporting period.
- 4.2. Figure 2.1 shows the locations of the monitoring stations used during the reporting period. Table 4.1 describes the details of the monitoring stations.

**Table 4.1 Locations of Impact Noise Monitoring Stations**

| Monitoring Station | Location                       | Description   |
|--------------------|--------------------------------|---|
| NM1*               | Tai Kwong Secondary School     | 1m from the exterior of the roof top façade of the School     |
| 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    |

\* NM1 impact construction noise monitoring station was relocated to NM1A on 1 September 2011.

- 4.3. Major noise sources during the noise monitoring included construction activities of Stage 1 of the Project and nearby traffic noise. In addition, for NM1, NM3 and NM6, general school activities are also a potential noise source during the noise monitoring.
- 4.4. The number of construction noise monitoring events and exceedances are summarized in Table 4.2 and Table 4.3 respectively.

**Table 4.2 Summary of Number of Monitoring Events for Construction Noise**

| Monitoring Parameter | Location | No. of monitoring events |
|----------------------|----------|--------------------------|
|                      |          | Nov 10 – Oct 11          |
| Construction Noise   | NM1*     | 44                       |
|                      | NM1A*    | 8                        |
|                      | NM2      | 52                       |
|                      | NM3      | 52                       |
|                      | NM4      | 52                       |
|                      | NM5      | 52                       |
|                      | NM6      | 52                       |
|                      | NM7      | 52                       |

\* NM1 impact construction noise monitoring station was relocated to NM1A on 1 September 2011.

**Table 4.3 Summary of Number of Monitoring Exceedances for Construction Noise**

| Monitoring Parameter | Location | Level of Exceedance | Level of Exceedance |
|----------------------|----------|---------------------|---------------------|
|                      |          |                     | Nov 10 – Oct 11     |
| Construction Noise   | NM1*     | Limit               | 0                   |
|                      | NM1A*    |                     | 0                   |
|                      | NM2      |                     | 0                   |
|                      | NM3      |                     | 0                   |

|  |     |              |          |
|--|-----|--------------|----------|
|  | NM4 |              | 0        |
|  | NM5 |              | 0        |
|  | NM6 |              | 0        |
|  | NM7 |              | 0        |
|  |     | <b>Total</b> | <b>0</b> |

\* NM1 impact construction noise monitoring station was relocated to NM1A on 1 September 2011.

- 4.5. All measured construction noise levels were below the Limit level and the graphical plots of the trends of the monitoring results are provided in Appendix E. No Action/Limit exceedance of construction noise monitoring was recorded in the reporting period.
- 4.6. There were three (3) noise related complaints followed up by Environmental Team in the reporting period. Investigations were carried out. The findings and the proposed mitigation measures were submitted to all relevant parties. Summaries of investigations are described in Section 7.1 of this report.

## 5 ENVIRONMENTAL SITE INSPECTION AND AUDIT

5.1. 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 period, 52 and 52 site inspections were carried out for Contract 1 and Contract 2 of the Project respectively.

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

### *Air Quality*

5.2.1. The stock of cement bags near the vehicle site entrance of Wall 8 and behind the grout mixer at Bridge 10A were not covered. The Contractor was reminded to cover the stock of cement bags with tarpaulin sheets.

5.2.2. Several stockpiles of dusty material were not covered at Slope 13 and observed dry at site entrance 24. The Contractor was reminded to properly cover the stockpiles to prevent fugitive dust generation and implement dust suppression measure on the soil stockpile.

5.2.3. Dark smoke was emitted from an excavator at S14. The Contractor was reminded to properly service the excavator to avoid dark smoke emission.

5.2.4. The haul road at Wall 4-7 was dry. The Contractor was reminded to take dust suppression measures more frequently to minimize fugitive dust generation. Exposed slopes near work area NB1 and at S17 were not completely covered by tarpaulin sheet. The Contractor was reminded to fully cover the exposed slopes with tarpaulin sheet

5.2.5. Cement was observed on the ground at Wall 4-7. The Contractor was reminded to clean up or spray water on the cement.

5.2.6. Slightly smoky emission was observed from an excavator working at Wall 10. The Contractor was reminded to conduct regular maintenance of the machineries working on site to avoid any dark smoke emission. **(Reminder)**

### *Noise*

5.2.7. Noise Emission Label (NEL) was found missing for the air compressor at Bridge 10A West Abutment and bridge level of Wall 8. The Contractor was reminded to affix NEL at obvious location on the air compressor.

### *Water Quality*

5.2.8. Bunding was missing on the temporary bridge at Bridge 11A. The Contractor was reminded to provide bunding at both sides of the bridge. General refuse and C&D materials were observed inside the u-channel at TP7 whereas leaves were found accumulated inside the u-channel along Wall 10 and Wall 17. The Contractor was reminded to remove the general refuse, C&D materials and leaves from the u-channel and properly maintain the drainage system on-site.

5.2.9. To avoid any silty surface run-off overflowing outside the works area, the Contractor was reminded to provide sand bags/bunds at the site boundaries at Wall 8 riverbank works area to intercept the surface run-off from works areas, especially during rainstorm.

5.2.10. Tarpaulin sheet coverage on the exposed slopes at NB21 was found incomplete. The Contractor was reminded to fully cover up the exposed slopes with tarpaulin sheet to avoid any soil erosion, especially during rainstorm.

### *Chemical and Waste Management*

- 5.2.11. Oil stains were observed near the drip tray of chemical containers at bridge level of Wall 8 and on the bridge surface at Bridge 11A. The Contractor was reminded to properly handle the chemicals and to clean up the oil stains and dispose them of as chemical wastes.
- 5.2.12. Two chemical containers were placed on ground without drip tray at Bridge 10A. The Contractor was reminded to provide drip tray to all chemicals stored on site.
- 5.2.13. Stockpile of C&D wastes was observed within works area at Bridge 11A and Bridge 10A. The Contractor was reminded to clear the C&D wastes accumulated within the works area regularly and sort and dispose of them properly.
- 5.2.14. Waste inside the waste skip placed near work area W8 was found mixing with some recyclable waste. The Contractor was reminded to sort the recyclable waste and clean up regularly.

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

- 5.2.15. Construction materials were placed very close to the retained trees at Retaining Wall 10 and work area TB1. The Contractor was reminded to keep all construction materials away from the retained trees and provide proper protection measures to the retained trees.
- 5.2.16. Ropes were tied on some retained trees and, in particular, a nail was found nailed into the tree branch to hang electric wires at Bridge 11A. Ropes to hang clothes were also found tied on retained trees at Bridge 10A. The Contractor was requested to untie the ropes, pull out the nail and not to hang wires onto the retained trees in the future.

#### ***Miscellaneous***

- 5.2.17. Stagnant water was observed inside a waste skip at Wall 4-7 and pile cap at Wall 8. The Contractor was reminded to clear the stagnant water and take mitigation measures to prevent mosquito breeding.
- 5.3. Particular observations during the site inspections for Contract 2 are described below:

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

- 5.3.1. Exposed soil stockpile was found on site without covering in work area NB41, S28, Bridge 15ASA, NLKP Pier 10, next to the waste storage area at NB42, underneath Lam Kam Flyover and Area B. The Contractor was reminded to cover up the stockpile with tarpaulin sheet to avoid soil erosion.
- 5.3.2. Uncovered opened cement bags were left on the ground near the grout mixing plant and near the u-channel at Bridge 12A. The Contractor was advised to cover the opened bags of cement and properly handle cement in the future.
- 5.3.3. Dark smoke was observed emitted from a drill rig at Bridge 13A Pier 2. The Contractor was reminded to properly maintain the plants on site.
- 5.3.4. Mud trails were observed on ground at the vehicle site entrance of W73. The Contractor was reminded to properly wash the vehicles before they leave the site.

- 5.3.5. Cement powder was scattered on ground at Bridge 13A, Area C, W38 and Bridge 18 C35. The Contractor was advised to clean up the cement powder and properly handle them in the future.
- 5.3.6. Grouting mixing process was found carrying out in an area without shelter at work area 15AP1. The Contractor was reminded to cover up with tarpaulin sheet on the top and at the 3 sides.
- 5.3.7. Stockpile of soil at work area NB42 was found without dust suppression measure. The Contractor was reminded to spray water frequently or cover up with tarpaulin sheet especially in the coming dry season. **(Reminder)**
- 5.3.8. Access roads in works area W38, NB41 and Area B was found dry. The Contractor was reminded to provide dust suppression measures such as regular water spraying on access roads within works area to minimize the dust impacts.

#### **Noise**

- 5.3.9. The flap of an air compressor at NLKP 7 was opened during operation. The Contractor was reminded to close the flaps of mechanical equipments during operation.
- 5.3.10. Noise Emission Label (NEL) was found missing for the air compressor at 18A. The Contractor was reminded to affix NEL to the air compressor.

#### **Water Quality**

- 5.3.11. Accumulation of silt and stagnant water was observed in the tray next to the sedimentation tank at Bridge 12A. The Contractor was reminded to clear the silt and stagnant water in the tray regularly.
- 5.3.12. Seepage of muddy water was observed from the gaps of concrete blocks under the piling area at Bridge 13A Pier2. To prevent muddy water from running off to the adjacent stream, the Contractor was requested to align a bunding at the foot of the concrete blocks to divert the seeped water to desilting facility.
- 5.3.13. The sand bag bunding at the bottom of the concrete blocks at Bridge 13A Pier2 was covered up by shotcrete layer which rendered the sand bags ineffective to prevent untreated water from running off to the adjacent stream. The Contractor was advised to provide an effective bunding to divert the untreated water to desilting facility.
- 5.3.14. The level of the concrete layer at NLKP Pier 2 had become higher than the sand bag bunding next to the u-channel. The Contractor was reminded to improve the bunding to intercept site runoff from entering the u-channel.



- 5.3.15. Exposed slope was observed near the u-channel at NLKP Pier 2. The Contractor was reminded to either cover the slope with tarpaulin or hydro-seed the slope to prevent surface runoff into the u-channel.
- 5.3.16. Accumulation of silty water and deposited silt was observed inside the wheel washing bays provided in Retaining Wall W65 works area and Gate G11. The Contractor was reminded to clear the deposited silt inside the wheel washing bays regularly and maintain the wheel washing facilities properly.
- 5.3.17. A sedimentation tank placed near the AquaSed at Gate G11 was almost full of silty water. The Contractor was reminded to treat the silty water before discharge and provide mitigation measures to avoid overflowing of untreated water and mosquito breeding.
- 5.3.18. Muddy run-off was found discharging to public drainage at 15AP4 and at work area W51. Muddy water was found accumulated on the ground under NLKP Pier 5. The Contractor was requested to construct bunds to divert the muddy run-off to desilting facility and closely monitor the drainage system to ensure the drainage system is working properly and well maintained. Muddy water accumulated on ground should be cleared to prevent muddy water flowing to nearby public drainage.
- 5.3.19. Silty water and deposited silt was observed inside the u-channel along the site boundaries of works area W38, slope at Gate 30, sump pit of the u-channel near work area W73 and desilting pit at 15AP4. Moreover, debris and weeds were found accumulated inside the drainage channels near work area W53 and 15AP3 respectively. Felled trees and leaves were also observed accumulated inside the u-channel at W38 and Gate 28. The Contractor was recommended to properly maintain the drainage systems/channels with regular clearance of deposited silt, weeds, felled trees, leaves and debris.

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

- 5.3.20. An oil drum was placed on ground without drip tray underneath Lam Kam Flyover and two bottles of chemical were placed on ground without drip tray at W73. The Contractor was reminded to provide drip tray to all chemical containers on site.
- 5.3.21. Excavated materials and non-inert C&D waste were accumulated near the sump pit at W73. The Contractor was reminded to keep excavated materials and C&D waste away from the sump pit and dispose of the waste in a timely manner.
- 5.3.22. A drip tray of chemical containers at Gate 30 was filled with silt. The Contractor was advised to clear the silt and prevent silt from getting into drip trays.
- 5.3.23. Soil nail installation controller was placed on ground without drip tray at Bridge 18 C35. The Contractor was reminded to provide drip tray to all soil nail installation controllers on site.
- 5.3.24. Oil stain was observed on ground at W49 and W56 and underneath a boring machine near the site entrance of W72B. The Contractor was reminded to clean up the oil stain, properly maintain the vehicles and plants on site and provide a tarpaulin sheet underneath all the equipments requiring repair and maintenance.
- 5.3.25. Empty cement bags were accumulated on ground at Gate 2, W56, W38 and Gate 15. Although they were dampened, the Contractor was reminded to remove empty cement bags off site in a timely manner and disposed of them properly.
- 5.3.26. Lid or cover was missing for a chemical container at Lam Kam Flyover and rainwater was accumulating inside the container. The Contractor was reminded to provide lid for all chemicals on site to prevent accumulation of water and hence overflow of the chemical contents.
- 5.3.27. Waste inside the waste skips near work area RW72, S29, and W66 were found mixing with some recyclable waste, like steel, aluminum cans, cardboards and plastic bottles. Similar case was also noted in waste skips placed in Area B where non-inert C&D wastes, general refuse and metal were

mixed up. The Contractor was reminded to implement the waste sorting system properly, clear the waste skip regularly and convey the message to the sub-contractors.

- 5.3.28. A hole was found on a drip tray at work area S29 and drain hole of drip tray was found damaged at work area W56. The Contractor was reminded to seal up and repair the hole before placing chemical inside the drip tray.
- 5.3.29. Parts of equipment were found stored up at W66. The Contractor was reminded to clear up the plants to suitable area or place them onto tarpaulin sheet to avoid contamination to the soil from the oil leaked from parts.
- 5.3.30. General refuse and C&D materials were found accumulated inside the u-channel at Slope 41. The Contractor was reminded to remove them from the u-channel and maintain the site in a clean and tidy condition.

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

- 5.3.31. Identification was missing for the transplanted trees within the site at Area B. The Contractor was reminded to tag the transplanted trees with the identification numbers.

#### ***Miscellaneous***

- 5.3.32. Stagnant water was observed inside the waste skip and inside the drip tray at Gate 7, on the bridge at NLKP Pier 5, trays and a pile cap at Gate 2 and inside the bay of base slab of retaining wall under construction near work area W73. The Contractor was reminded to clear the stagnant was and take mitigation measures to prevent mosquito breeding.

## **6 SUMMARY AND REVIEW OF NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY**

- 6.1. There was no 1-hour TSP and 24-hour TSP and construction noise monitoring exceedance recorded in the reporting period.
- 6.2. No Action/Limit Level exceedance of construction noise monitoring was recorded in the reporting quarter.
- 6.3. There were three (3) noise related complaints followed up by Environmental Team in the reporting period. Investigations were carried out. The findings and the proposed mitigation measures were submitted to all relevant parties. Summary of investigation is described in Section 7.1.

#### **Summary of Actions Taken in the event of Non-Compliance**

- 6.4. In the event of non-compliance, actions were taken in accordance with the Event-Action Plan in the updated EM&A Manual. Investigation was carried out within three working days of identification of non-compliance, checking the implementation status of the mitigation measures, etc. Assessments showed that the monitoring exceedance was not due to the Project works and therefore no further action was required to be taken.

## **7 ENVIRONMENTAL COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS**

- 7.1. Four (4) environmental complaints were followed up by Environmental Team in the reporting period. Details of the complaints are shown below:
  - 7.1.1. EPD referred a public complaint about renovation noise from roadwork at Ha Wun Yiu, Tai Po, at midnight on 10 December 2010. As informed by the Contract 1 (HY/2008/09) Contractor (CSHK) and Contract 2 (HY/2009/08) Contractor (GCL) of Stage 1 of the Project, and confirmed by the Engineer,

no construction activity was carried out by the Contractors of Stage 1 of the Project at the concerned area during the concerned timeslot. The complaint was considered unrelated to the Project works.

- 7.1.2. EPD referred a public complaint on 4 January 2011 about construction noise was still generated on Sunday from the construction site of China State Construction Engineering (Hong Kong) Ltd. (CSHK) at Tolo Highway near Lai Chi Shan. The noise was particularly serious on 2 January 2011 (Sunday) starting from 09:00am. As informed by the Contractor (CSHK) and confirmed by the Engineer of the Project, floor cleaning and wood surface gluing works were carried out on the bridge deck next to Lai Chi Shan on 2 January 2011. Although a valid CNP was obtained for the use of certain powered mechanical equipments, no mechanical equipment was in operation on the date.

The complaint could be project related and the Contract 1 Contractor (CSHK) was recommended the mitigated measures as follows:

- 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 from manual works to minimum; and
- Foster better public relations with the sensitive receivers nearby.

- 7.1.3. EPD referred a public complaint about the noise generated from formwork construction on 6 March 2011 (Sunday) starting from 09:00am at the Tolo Highway Widening construction site opposite to Tak Nga Court affected the residents. As informed by the Contract 1 (HY2008/09 - Between Island House Interchange and Ma Wo) Contractor, China State Construction Engineering (Hong Kong) Limited, of Stage 1 of the Project, and confirmed by the Engineer of the Project, only water barrier laying work, general site cleanliness and tidiness works were carried out at the area close to Tak Nga Court on 6 March 2011. No activity likely to cause the noise nuisance was performed on the date at the area. The complaint could be project related and the Contract 1 Contractor (CSHK) was recommended the mitigated measures as follows:

- 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 from manual works to minimum; and
- Foster better public relations with the sensitive receivers nearby.

- 7.1.4. EPD referred a complaint from Mr. Lai about dust emission from construction site of the Tolo Highway widening works near Ma Wo on 9 September 2011. As informed by the Contract 2 (HY2009/08 - Between Ma Wo and Tai Hang)'s Contractor, Gammon Construction Ltd, of Stage 1 of the Project and confirmed by the Engineer of the Project, no substantial dusty construction activity was being carried out on that day at the work area nearby the residential flat of the complainant. The dust was likely from the haul road of the construction site without sufficient dust suppression measure. Although the 24-hour TSP monitoring at the nearest monitoring station (Sheung Wan Yiu, AM1A) on 6 September 2010 was 30.4 ug/m<sup>3</sup>, which was below the action level of 176.6 ug/m<sup>3</sup>, the Contractor was recommended and agreed the mitigation measures as follows:

- Frequently watering the haul road above Ma Wo subway;
- Watering the dry soil during excavation for W45 near the subway;
- Erect canvas to control the cement flying in the open air during shotcreting; and
- Nominate a direct labour to monitor the agreed measures like water spraying etc.

Follow-up site visit was conducted on 22 September 2011 to conform the implementation of mitigation measures. No fugitive dust was observed arising from the construction works area. Water spraying on haul road near Ma Wo was observed during the site audit and a worker was assigned for the water spraying works.

- 7.2. No notification of summons and prosecutions was received in the reporting period.
- 7.3. Cumulative statistics on complaints, notifications of summons and successful prosecutions are summarized in Appendix F.

## **8 REVIEW OF THE VALIDITY OF THE EIA/ERR PREDICTION**

- 8.1. No 1-hour and 24-hour TSP monitoring exceedance was recorded in the reporting period. All of the air quality monitoring results in the reporting period were below the Action Levels established in the baseline air quality monitoring carried out in October and November 2009. The result was in line with the Environmental Impact Assessment (EIA) and Environmental Review Report (ERR) prediction that dust generation would be controlled and would not exceed the acceptable criteria, with proper implementation of the recommended dust mitigation measures.
- 8.2. No construction noise monitoring exceedance was recorded in the reporting period. This is generally in line with the EIA and ERR prediction that with the implementation of noise mitigation measures, the construction noise from the Project works will meet the stipulated criterion at the residential NSRs and at a majority of the education institutions, except that elevated construction noise level at Wong Shiu Chi Middle School (NM3) was predicted by the EIA and ERR.

## **9 REVIEW OF ENVIRONMENTAL IMPLEMENTATION STATUS**

- 9.1. The impact air quality and noise monitoring programme ensured that any environmental impact to the receivers would be readily detected and timely actions could be taken to rectify any non-compliance. The environmental monitoring results indicated that the construction activities in general were in compliance with the relevant environmental requirements and were environmentally acceptable. The weekly site inspection ensured that all the environmental mitigation measures recommended in the EIA/ERR were effectively implemented. Despite the minor deficiencies found during site audits, the relevant contractor had taken appropriate actions to rectify deficiencies within reasonable timeframe. Therefore, the effectiveness and efficiency of the mitigation measures were considered high in most of the time.
- 9.2. For all the parameters under monitoring as mentioned in Section 8, the measured levels were in line with the EIA and ERR predictions generally. This indicates that the mitigation measures were effectively implemented.

## **10 REVIEW OF EM&A PROGRAMME**

- 10.1. The environmental monitoring methodology was considered well established as the monitoring results were found in line with the EIA predictions.
- 10.2. As effective follow up actions were promptly taken once exceedances were recorded, no further exceedance occurred for each case. The EM&A programme was considered successfully and adequately conducted during the course of the reporting period.

## **11 CONCLUSIONS**

- 11.1. The construction phase and EM&A programme of Stage 1 of the Project commenced on 23 November 2009.
- 11.2. Air quality and noise monitoring, and weekly site inspections were carried out in the reporting period, in accordance with the updated EM&A manual.
- 11.3. All 1-hour and 24-hour TSP monitoring results complied with the Action / Limit Level in the reporting period.
- 11.4. There were three (3) noise related complaints followed up by Environmental Team in the reporting period. Investigations were carried out. The findings and the proposed mitigation measures were submitted to all relevant parties.
- 11.5. Four (4) environmental complaints were followed up by Environmental Team in the reporting period.
- 11.6. No notification of summons and prosecution was received in the reporting period.
- 11.7. Mitigation measures had been implemented by the Contractors to minimize the environmental impacts due to construction activities. Site inspections carried out by ET and IEC showed that the Contractors rectified the problems observed promptly and no major environmental deficiency was

induced. The EM&A programme was considered successfully and adequately conducted during the course of the reporting period.