



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 2011 - October 2012**

[02/2013]

	Name	Signature
Prepared & Checked:	Phoebe Ng <i>PN</i>	
Reviewed & Approved:	Y T Tang	

Version: Rev. 0 Date: 7 February 2013

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.
15/F, Grand Central Plaza, Tower 1, 138 Shatin Rural Committee Road, Shatin, NT, Hong Kong
Tel: (852) 3922 9000 Fax: (852) 2317 7609 www.aecom.com



Our ref AFK/TK/bw/T264022/22.01/L-0142

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.

7 February 2013

By Fax (2805 5028) and Post

Dear Sir,

Attn.: Mr. James Penny

**Widening of Tolo Highway between
Island House Interchange and Tai Hang
Environmental Permit No.: EP-324/2008/A
Submission of Annual EM&A Review Report for November 2011 to October 2012 (Stage 1)**

We refer to the Annual EM&A Review Report for November 2011 to October 2012 (Stage 1) for the captioned Project submitted by ET via email on 1, 6 and 7 February 2013. We confirm we have no comment.

Yours faithfully

for MOTT MACDONALD HONG KONG LIMITED

A handwritten signature in black ink, appearing to read 'Terence Kong'.

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	18
7 ENVIRONMENTAL COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS	19
8 REVIEW OF THE VALIDITY OF THE EIA/ERR PREDICTION	22
9 REVIEW OF ENVIRONMENTAL IMPLEMENTATION STATUS	22
10 REVIEW OF EM&A PROGRAMME	22
11 CONCLUSIONS	23

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 was governed by a valid Environmental Permit (EP-324/2008 and EP-324/2008/A)(EP) during the reporting period mentioned below. 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 2011 and 31 October 2012.

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

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

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

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

Breaches of Action and Limit Levels for Air Quality

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

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

One (1) Action Level exceedance was recorded for 24-hour TSP monitoring at AM2 in the reporting period. The dust exceedance was considered not due to the Project works.

Breaches of Action and Limit Levels for Noise

No 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, hence, three (3) Action Level exceedance of construction noise was recorded 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

Seven (7) 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 was governed by a valid Environmental Permit (EP-324/2008 and EP-324/2008/A)(EP) during the reporting period mentioned below.
- 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 third 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 2011 to 31 October 2012.

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
ER of Stage 1, Contract 1 (Hyder-Arup-Black & Veatch Joint Venture)	Chief Resident Engineer /TOLO1	James Tsang	9038 8797	26674000
ER of Stage 1, Contract 2 (Hyder-Arup-Black & Veatch Joint Venture)	Chief Resident Engineer /TOLO2	Paul Appleton	9097 5833	2653 2348
IEC of Stage 1 (Mott MacDonald Hong Kong Ltd.)	Independent Environmental Checker	Terence Kong	2828 5919	2827 1823
Contractor of Stage 1, Contract 1 (China State Construction Engineering (Hong Kong) Ltd.)	Site Agent	Eddie Tang	9863 7686	2667 5666
	Environmental Officer	Michael Tsang	9277 4956	2667 5666
Contractor of Stage 1, Contract 2 (Gammon Construction Ltd.)	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	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:
- At-grade road construction;
 - Bored piling;
 - Bridge construction;
 - Bridge jacking;
 - Demolition of central dividers;
 - Drainage works;
 - Noise barrier footing construction and panel installation;
 - Pile cap construction;
 - Pipe pile wall construction;
 - Pre-bored H-piles construction;
 - Retaining wall construction;
 - Road paving;
 - Site investigation;
 - Slope works;
 - Soil nails works;
 - Temporary shoring, sheetpiling and excavation; and
 - Tree felling & transplantation.
- 1.15. The construction works carried out by the Contract 2 Contractor (GCL) in the reporting period were:
- Condition survey of existing structures;
 - Construction of haul road;
 - Construction of pilecap / spread footing of noise barrier / semi noise enclosure;
 - Entrusted watermains works;
 - Excavation of trial trenches to locate existing utilities;
 - Extension of box culvert and subway;
 - Ground investigation and predrilling;
 - Modification of existing bridge structures;
 - Noise barrier construction;
 - Piling and structural works of bridges;
 - Retaining wall construction;
 - Sewer Installation; and
 - Slope works, including installation of soil nails.
- 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. As Tai Kwong Secondary School was closed down with effect from 1 September 2011, air quality (AM4) and noise (NM1) monitoring stations were relocated to 168 Shek Kwu Lung Village, naming AM4A and NM1A respectively, starting from 1 September 2011. The same air quality Action and Limit of AM4 were adopted for AM4A. For the measured construction noise level, the same noise Action Level of NM1 was adopted for NM1A, whereas Limit Level for residential noise sensitive receiver was adopted for NM1A.
- 2.5. The monitoring locations used during the reporting period are depicted in Figure 2.1.
- 2.6. 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)

- 2.7. 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.
- 2.8. The environmental quality performance limits of air quality and noise monitoring are given in Appendix C.

Environmental Mitigation Measures

- 2.9. 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
AM4A	168 Shek Kwu Lung Village	Roof of the switch room

- 3.3. The weather was mostly sunny, with several fine, cloudy and rainy days within the reporting period. 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 11 – Oct 12
1-hr TSP	AM1A	192
	AM2	192
	AM3	192
	AM4A	192
24-hr TSP	AM1A	64
	AM2	64
	AM3	64
	AM4A	64

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 11 – Oct 12
1-hr TSP	AM1A	Action	0
		Limit	0
	AM2	Action	0
		Limit	0
	AM3	Action	0
		Limit	0
	AM4A	Action	0
		Limit	0
		Total	0
24-hr TSP	AM1A	Action	0
		Limit	0
	AM2	Action	1
		Limit	0

	AM3	Action	0
		Limit	0
	AM4A*	Action	0
		Limit	0
		Total	1

- 3.5. All 1-hour TSP results were below the Action and Limit Level at all monitoring locations in the reporting period.
- 3.6. All 24-hour TSP results were below the Limit Level at all monitoring locations in the reporting period.
- 3.7. One (1) Action Level exceedance of 24-hour TSP monitoring was recorded on 2 August 2012 at AM2. From the information of EPD, the Air Pollution Index (API) at Tai Po ranged from 54 to 91 with averaged 66 during the monitoring period. Excavation works, removal works and temporary work for slope stabilization were carried out on 1 August 2012 and 2 August 2012. The following dust mitigation measures have been implemented by the Contract 1 Contractor (CSCE):
- Maintaining the soil wet when loading and unloading;
 - Covering the loads of dump trucks;
 - Spraying water continually when breaking concrete; and
 - Erection of dust screen.

While the abovementioned construction activities have been carried out since June 2012 with the dust mitigation measures implemented, no air quality monitoring exceedance relating to Project works was recorded in previous monitoring works. And the 24-hr TSP monitoring result on 8 August 2012 was $72.5 \mu\text{g}/\text{m}^3$ which was below action / limit level. The dust exceedance was therefore considered not due to the Project works. However, the Contractor was recommended to maintain implementation of existing dust mitigation measures.

- 3.8. 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
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

- 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 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 11 – Oct 12
Construction Noise	NM1A	52
	NM2	52
	NM3	52
	NM4	52
	NM5	52
	NM6	52
	NM7	52

Table 4.3 Summary of Number of Monitoring Exceedances for Construction Noise

Monitoring Parameter	Location	Level of Exceedance	Level of Exceedance
			Nov 11 – Oct 12
Construction Noise	NM1A	Limit	0
	NM2		0
	NM3		0
	NM4		0
	NM5		0
	NM6		0
	NM7		0
	Total	0	

- 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. Three (3) Action Level exceedance of construction noise 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, 53 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. Soil stockpile and exposed slope was found covered up incompletely at central divider works area at NB2 and abutment NBSA. The Contractor was reminded to cover the soil stockpile and exposed slope completely.
- 5.2.2. Exposed slope was dry and bunding was found missing along the site boundary at W25. The Contractor was reminded to provide dust suppression measures to minimize fugitive dust generation and provide sand bag/bunds to intercept the surface run-off from works area.
- 5.2.3. Exposed soil stockpile was observed stored up at S15. The Contractor was reminded to cover up the exposed soil stockpile with tarpaulin sheet to minimize the fugitive dust arising.
- 5.2.4. Cement was observed on the ground at W8. The Contractor was reminded to clear it up or spray water on the cement.
- 5.2.5. Mud trails were observed at the site entrance in Gate 44. The Contractor should clear the mud trails on the public road.
- 5.2.6. Exposed slopes at NBWNA were not completely covered up by tarpaulin sheet. The Contractor was reminded to cover up the exposed slopes with tarpaulin sheet completely.
- 5.2.7. Mud trails at the site entrance/exit at Gate 26 were observed. 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. Proper drainage channels/bunds/wheel washing bay should be provided to collect the run-off from wheel washing facilities
- 5.2.8. Improper covering for a stock of cement bags (more than 20 bags) was observed at Area NB20. The Contractor was reminded to properly cover every stock of more than 20 bags of cement / dry PFA by impervious sheeting or placed in an area sheltered on the top and the 3 sides.

Noise

- 5.2.9. Noise Emission Label (NEL) was found missing for the air compressor at NB16. The Contractor was reminded to affix NEL to the air compressor.
- 5.2.10. The absorptive material wrapping to the breaking tip of the breakers working in works area were found improper at Gate 44. The Contractor should provide proper absorptive material wrapping to the breaking tips of the breakers working in works area to minimize the noise impact.
- 5.2.11. Valid noise emission label for air compressor at Bridge 10A was observed missing. The Contractor was reminded to display a valid noise emission label for the air compressor during operation.

Water Quality

- 5.2.12. Silty water and waste was found accumulated along the site boundary at W4-7. The Contractor was reminded to drain off the silty water and clear the waste.

- 5.2.13. Mud and cement water were found accumulated inside the u-channel at Wall 8 and Bridge 10 East Abutment respectively. The Contractor was reminded to clear the mud, cement water and deposited cement inside the u-channel.
- 5.2.14. Muddy water was found accumulated inside the sump pit at NB20. The Contractor was reminded to clear the muddy water to avoid any substandard water flowing outside the works area.
- 5.2.15. Slurry was found accumulated inside the piling area at Gate 26. The Contractor should clear the slurry regularly to avoid the slurry overflowing from the works area.
- 5.2.16. Broken sandbags were observed at the site boundary of Gate 26. The Contractor was reminded to replace the broken sandbags as soon as possible. The Contractor was recommended to review the effectiveness of bunds/sand bags/channels at the site boundaries, soil stockpile area and works areas regularly.
- 5.2.17. Stagnant water was accumulated at Area NB16. The Contractor was reminded to remove the stagnant water regularly. The Contractor was also recommended to maintain the drainage system properly.
- 5.2.18. Broken sandbags were observed near the entrance of Gate 26. The Contractor was reminded to replace all broken sandbags and maintain the sandbag bunding properly to prevent surface runoff from construction work flowing outside the work area and discharging to public drain. Silt accumulated near the broken sandbags should be removed as soon as possible to avoid any silty water discharging to nearby gully. The Contractor was also recommended to review and maintain the effectiveness of sandbag bunding regularly.
- 5.2.19. Oil drums were observed placed on ground without drip tray at New Banyan West Bridge. The Contractor was reminded to provide drip trays for all oil drums on site to prevent oil leakage.
- 5.2.20. Silt was accumulated near the gully at Area NB16. Although, sandbags were observed provided at the gully, the Contractor was reminded to remove the silt accumulated near the gully /u-channel and provide sufficient mitigation measure (such as covering the gullies and other relevant measures) to prevent any silty water runoff to public drain due to rainfall.
- 5.2.21. Stagnant water was accumulated at NB20 near the site entrance/exit. The Contractor was reminded to remove the stagnant water regularly.

Chemical and Waste Management

- 5.2.22. An oil drum and two chemical containers were found placed on ground without drip tray at NB14-18 and Bridge 10A. The Contractor was reminded to provide drip tray to oil drum and chemical containers on site.
- 5.2.23. Oil mixing with water was found on ground at site entrance no.3. The Contractor was reminded to clear the oil mixture.
- 5.2.24. Oil stains were observed on the bare ground near NB1b and TB2. Oil leakage was observed on ground from the power pack placed at jacking pit. The Contractor was reminded to provide drip tray to retain any leaked oil. Oil stain on ground should be cleared and disposed of as chemical waste.
- 5.2.25. Stockpile of empty cement bags and general refuse were found under TB1 near Gate 3. The Contractor was reminded to remove the empty cement bags and general refuse regularly and disposed of properly.
- 5.2.26. Drain hole of drip tray was unplugged on Bridge 10A. Drain hole of drip tray should be sealed up to prevent chemical oil leakage from the chemical container.

- 5.2.27. Construction materials were found accumulated on the Bridge 10A. The Contractor was reminded to clear the construction materials on site. (Reminder)
- 5.2.28. Chemical container was observed without chemical label at Wall 8. The Contractor was reminded to affix the chemical label on the chemical container.
- 5.2.29. Oil stains were found on ground at Bridge 11 and on ground near the breaking tip of breaker under Bridge 11 near Gate 4. The Contractor was reminded to clear the oil stains and dispose of as chemical waste. The Contractor was reminded to provide tarpaulin sheet to the breaking tip to retain oil leakage.
- 5.2.30. Chemical containers were observed placed on ground without drip trays at Gate 25 and Gate 26. The Contractor was reminded to provide drip trays or equivalent measures for all oil drums / chemical containers to intercept any oil / chemical leakage occurred on site.
- 5.2.31. No drip tray provided for a generator at Area NB16 was observed and oil leakage was also found from the generator. The Contractor was reminded to provide drip tray for the generator to retain any leaked oil. Oil stain on ground should be removed and disposed as chemical wastes.
- 5.2.32. Excavated mud was accumulated inside a drip tray underneath an air compressor at Area NB16. The Contractor was requested to remove the mud inside the drip tray and handle it as chemical wastes.

Landscape and Visual Impact

- 5.2.33. Metal wires were found tied onto the retained tree near NB16. The Contractor was reminded to remove the metal wires and do not use the retained tree as a physical support.
- 5.2.34. Sand was observed accumulated around the retained trees and retained trees were not fenced off at jacking pit. The Contractor was reminded to setup a tree protection zone and provide proper protective measure to the retained trees on site.
- 5.2.35. Construction waste was found placed near the retained tree under TB1 near Gate 3. The Contractor was reminded to remove the construction waste and provide proper protective measure to the retained tree.

Miscellaneous

- 5.2.36. Stagnant water was found accumulated in the precast gully at NB14-18 and trench at NB27. The Contractor was reminded to clear the stagnant water and provide mitigation measures to prevent mosquito breeding.
- 5.2.37. Stagnant water was found accumulated on ground at jacking pit, inside the drip tray near TB2 and on Bridge 10A and inside the u-channel at Gate 3. The Contractor was reminded to remove the stagnant water to avoid mosquito breeding and dispose of the stagnant water inside the drip tray as chemical waste.
- 5.2.38. Stagnant water was found accumulated inside the excavation area near W8 Bay 2-3 and inside the drip tray at NB16 & Wall 8. The Contractor was reminded to remove the stagnant water and dispose of as chemical waste.
- 5.2.39. Stagnant water was accumulated in receiving pit and drip tray of oil drum at TB2 respectively. The Contractor was reminded to remove the stagnant water in the receiving pit more frequently. The Contractor was also reminded to remove the stagnant water inside the drip tray as soon as possible and handle it as chemical wastes.

5.3. Particular observations during the site inspections for Contract 2 are described below:

Air Quality

- 5.3.1. Access roads near RW71 and exposed slope near Gate 30 were observed dry. The Contractor was reminded to spray water more frequently during the dry season.
- 5.3.2. Smoke was observed emitting from the roller at W72. The Contractor was requested to repair and maintain the plant on site properly.
- 5.3.3. Mud trails were found on ground at the exit point near NLKP 9. The Contractor was reminded to clear up the mud trails and provide measure to ensure the vehicles bodies and wheels were kept clean of deposited silt before leaving the site.
- 5.3.4. Exposed soil surfaces/slopes were found at W66 and works area near Gate no. 29. The Contractor was reminded to provide regular water spraying or tarpaulin sheet coverage to the exposed soil surfaces/slopes to minimize dust impacts.
- 5.3.5. The Contractor was reminded to maintain and review the dust suppression measure at W45-W46 and S37. (Reminder)
- 5.3.6. Mud trails were found on ground at the exit point near NLKP 9 and Gate 2. The Contractor was reminded to clear up the mud trails and provide measure to ensure the vehicles bodies and wheels were kept clean of deposited silt before leaving the site.
- 5.3.7. Dusty construction material was found placed on ground at W65b. The Contractor was reminded to remove the dusty construction material to avoid fugitive dust spreading.
- 5.3.8. Exposed slope near Bridge 15 AP4 was incompletely covered with tarpaulin sheet. The Contractor was reminded to cover up the exposed slope with tarpaulin sheet completely or provide shotcreting to prevent generation of silty surface run-off.
- 5.3.9. Access roads were found dry at TW4. The Contractor was reminded to provide frequent water spraying on the access roads to avoid fugitive dust emission.
- 5.3.10. The Contractor was reminded to provide regular water spraying or tarpaulin sheet coverage to the exposed soil surfaces/slopes at NB42 to minimize dust impacts. (Reminder)
- 5.3.11. Mud trails were observed on ground at the site entrance at S37. The Contractor should review and maintain the wheel washing facilities provided at works area regularly to ensure the deposited silt on vehicles' wheels and bodies was washed off effectively. Mud trails on the public road should be cleared.
- 5.3.12. Dry soil surface was observed at S44. The Contractor was reminded to provide dust suppression measure to the dry soil surface to avoid generation of fugitive dust.
- 5.3.13. Cement was observed on ground in the works area and on the access road at Bridge 15A. The Contractor was reminded to clear it up or spray water on the cement to prevent generation of fugitive dust.
- 5.3.14. Insufficient dust mitigation measure for broken concrete storage & concreting area next to pedestrian bridge at Gate 15 was observed. The Contractor was reminded to provide proper mitigation measures (such as erection tarpaulin sheet at work areas, covering / dampening of stockpiles and broken concrete) to prevent any dust emission generation and cause the air nuisance to public.
- 5.3.15. The Contractor was reminded to cover the stockpiles at Area W56B by tarpaulin sheet after work.

Noise

- 5.3.16. Absorptive material wrapping at the breaking tip at W38 works area should be improved. The Contractor should wrap the breaking tip of the breaker completely before carry out rock breaking works.
- 5.3.17. Sound insulation material wrapping at the breaking tip at W65b should be improved. The Contractor was advised to completely wrap the breaking tip of the breaker with sound insulation materials.
- 5.3.18. Noise Emission Label(NEL) was found missing for the generator employed in W56b. The Contractor should affix the NEL to the generator within the works area.

Water Quality

- 5.3.19. Muddy water was found on ground near Gate 30 and NLKP 9. The Contractor was reminded to clear the muddy runoff; cover the slope with tarpaulin sheet or provide shotcreting to the slope. Proper bunding should be provided along the boundary to intercept surface runoff from flowing into the nearby public drainage.
- 5.3.20. Cement and C&D waste was found accumulated inside the u-channel and plastic bag was found blocking the entrance of the pipe at Link Bridge 1. The Contractor was reminded to clear the cement and C&D waste and provide traps to intercept the silt and debris before discharge.
- 5.3.21. Desilting facility near Bridge 15 AP4 should be improved. The Contractor was recommended to install additional inlet pipe to the sedimentation tank for the wastewater collection from the desilting pit to prevent overflowing of untreated water from the desilting pit in coming wet season.
- 5.3.22. Mud and silt accumulated inside the u-channel and mud trails were observed on ground at Bridge 15 AP4. The Contractor was recommended to clear the mud and silt inside the u-channel and provide sufficient sand bags/bundings to intercept the muddy surface run-off before discharge. Mud trail on ground should be cleared and regularly review the drainage system to ensure the drainage system is properly maintained.
- 5.3.23. Muddy water was found discharging to the public drainage and loose sand bags were observed in the catchpit at W51. The Contractor was recommended to provide additional sand bags/bundings with shotcreting around the sump pit and additional sand bags/bundings to the inlet and outlet of the catchpit. Also, the Contractor was recommended to provide geotextile coverage on site boundary to prevent seepage of surface run-off generated from works area. Temporary exposed slopes/surface should cover up with tarpaulin sheet to minimize the generation of silty run-off. Deposited silt and debris inside drainage in W51 should be cleared. Muddy run-off should be diverted to desilting facility and closely monitor the drainage system to ensure the drainage system is properly maintained. No substandard surface run-off from construction site shall be discharge to public drains.
- 5.3.24. Muddy surface run-off was observed discharging outside the site area and sand bags/bundings provided at the boundary of the work areas were insufficient at TW1, Link Bridge 3 and Link Bridge 1 North Abutment. The Contractor should clear the mud on ground and provide sufficient sand bags/bundings at the boundaries. Muddy run-off should be directed to sedimentation tank to avoid generation of muddy run-off overflowing outside the works area.
- 5.3.25. Accumulation of silty water was observed inside the wheel washing bay at W71. The Contractor was reminded to clear the deposited silt inside the wheel washing bay regularly and maintain the wheel washing facilities properly.
- 5.3.26. Some leaves were observed inside the u-channel at access to W35A. The Contractor was reminded to remove the leaves inside the drainage channel to maintain the drainage system properly.
- 5.3.27. Broken sand bags were observed placed on ground near the public drainage at Bridge 12A. The Contractor was reminded to replace the broken sand bags on ground.

- 5.3.28. Mud was found accumulated inside the u-channel at S44. The Contractor was reminded to clear the mud inside the u-channel and provide addition sand bags along the site boundary to avoid overflowing of mud and substandard water from the works area.
- 5.3.29. Muddy water was observed flowing outside to the public road from the gaps of water barrier near the piling area at Bridge 15A Pier 6. The Contractor was reminded to align a bunding or provide tarpaulin sheet at the footing of the water barrier to divert the surface run-off to desilting facility.
- 5.3.30. Exposed soil stockpile was observed at works area at Tai Wo Service Road West during rainstorm. The Contractor was reminded to cover up the exposed soil stockpile with tarpaulin sheet to minimize generation of silty run-off during rainstorm.
- 5.3.31. General refuse and C&D materials were observed near the u-channel at S20. The Contractor was reminded to remove the general refuse and C&D materials from the u-channel and properly maintain the drainage system on-site.
- 5.3.32. Substandard run-off was found discharging to the public drainage at NB42. The Contractor was reminded to properly maintain and review the temporary drainage systems provided within works area and ensure that run-off was properly desilted prior to discharging to public drains. Any untreated run-off should be avoided from overflowing to public drains.
- 5.3.33. Mud and broken sandbags were observed on road at Gate 40. The Contractor was reminded to remove the mud and replace the broken sandbags as soon as possible to prevent any muddy water runoff from the construction work area to the public drain due to rainfall. The Contractor was recommended to review the effectiveness of sandbags regularly.
- 5.3.34. Mitigation measure for exposed slope at W50 was observed insufficient. The Contractor was reminded to cover the exposed slope properly to prevent any surface runoff to the nearby public drain.
- 5.3.35. Oil drum and chemical containers were placed on ground at Gate 16 without drip trays. The Contractor was reminded to provide drip trays for all oil drums and chemical containers to intercept any oil leakage.
- 5.3.36. Oil drum was observed placed on ground at Area NLKP9 without drip tray. The Contractor was reminded to provide drip tray or equivalent measures for all oil drums on site to avoid any oil leakage occurred.
- 5.3.37. Oily water was accumulated inside the drip trays at Area W45. The Contractor was reminded to remove the oily water and handle it chemical waste. The Contractor was recommended to remove the oily water / leaked oil inside the drip trays regularly to prevent any overflow.
- 5.3.38. Stagnant water was accumulated at Area W49. The Contractor was reminded to remove the stagnant water more frequently and maintain the drainage system properly.

Chemical and Waste Management

- 5.3.39. Waste was observed at material storage area near RW71. The Contractor was advised to store the wastes in designated storage area. Waste should be disposed of regularly and sorted properly. Waste inside the waste skip near RW71 was found mixing with some recyclable waste, like woods and papers. The Contractor was reminded to clear the waste and implement the waste sorting system properly.
- 5.3.40. Oil mixing with water was observed on ground near NB42 and underneath the vehicle at Bridge 18. The Contractor was reminded to clear the oily mixture and treat the oily mixture as chemical waste.
- 5.3.41. Empty cement bags were found accumulated near NLK Pier 9. The Contractor was reminded to clear up the empty cement bag.

- 5.3.42. Deposited silt was observed inside the water recycling tank at NLK Pier 9. The Contractor was reminded to clear the deposited silt.
- 5.3.43. The drain hole of a drip tray at work area TW1 was unplugged. The Contractor was reminded to seal up the hole to prevent chemical oil leakage from the equipment.
- 5.3.44. C&D materials, vegetation and excavated materials waste were found accumulated on ground at Bridge 18 north abatement. The Contractor should clear up the C&D materials, vegetation and excavated materials waste and sort out the recyclable waste to keep the site in a tidy condition.
- 5.3.45. Oil stain was found on ground underneath the air compressor and compressed air tank near NLKP 9. The Contractor was reminded to clear the oil stain and check potential leakage from containers and machineries.
- 5.3.46. Plants were found stored up on bare ground at W65b. The Contractor was reminded to clear the plants or place them on tarpaulin sheet to avoid oil leakage to the bare ground.
- 5.3.47. Construction debris was found accumulated on bridge deck and inside the waste skip at NLKP 3. The Contractor was reminded to clear the construction debris on site. (Reminder)
- 5.3.48. Oil stains were observed on the ground at NLKP 7. The Contractor was reminded to clear the oil stains.
- 5.3.49. Two chemical containers were placed on ground without drip tray at W38. The Contractor was reminded to provide drip tray to the chemical containers on site.
- 5.3.50. Vegetation wastes were found accumulated along the site boundary at W56. The Contractor was reminded to clear up the vegetation wastes to keep the site in a tidy condition.
- 5.3.51. Waste was observed inside the drip tray at TW4. The Contractor was reminded to clear the waste accumulated inside the drip tray.
- 5.3.52. The Contractor was reminded to clear the construction waste regularly on Lam Kam Bridge. (Reminder)
- 5.3.53. Breaking tip of breaker was found placed on bare ground at S38. The Contractor was reminded to place the breaking tip onto the tarpaulin sheet to avoid the oil leaked from the breaking tip to the ground.
- 5.3.54. The drain hole of a drip tray placed at Bridge 15A Pier 6 was unplugged. The Contractor was reminded to seal up the drain hole to prevent oil leakage from the equipment.
- 5.3.55. Vegetation wastes were found accumulated along the site boundary at W35A. The Contractor was reminded to clear up the vegetation wastes to keep the site in a tidy condition.
- 5.3.56. Recyclable waste such as wood was found mixing with general refuse and construction material inside the waste skip at W38. The contractor was reminded to sort out the recyclable waste and clear the waste skip regularly.
- 5.3.57. Cans and bottles were observed in site area at NB42. The Contractor was reminded to remove the cans and bottles regularly. The Contractor was also reminded to maintain the site cleanliness and tidiness.
- 5.3.58. The Contractor was reminded to sort the general refuse, paper, plastic bottles and aluminum cans at Area NLKB SA properly. The Contractor was also reminded to provide labels for all recycling bins on site.
- 5.3.59. General refuse were accumulated at Gate 30 and LB3 WA. The Contractor was reminded to dispose the general refuse more frequently and provide sufficient receptacles for general refuse collection on site. The Contractor was also reminded to maintain the site cleanness and tidiness.

- 5.3.60. Breaking tip of breaker was found placed on bare ground at Area NLKSA. The Contractor was reminded to place the breaking tip onto the tarpaulin sheet to avoid the oil leaked from the breaking tip to the ground
- 5.3.61. General refuse and C&D waste were accumulated at NB 44. The Contractor was reminded to remove the general refuse and C&D waste regularly and maintain the site tidiness and cleanness.

Landscape and Visual Impact

- 5.3.62. Metal wire was found tied onto the retained tree at RWB12B. The Contractor was reminded to remove the metal wire and do not use the retained tree as a physical support.
- 5.3.63. Construction material was found placed near the retained tree at NB44. The Contractor was reminded to remove the construction material and provide proper protective measure to the retained tree.

Miscellaneous

- 5.3.64. Stagnant water was accumulated on ground under Bridge 15 and inside the u-channel along the site boundary near W38 works area and the drip tray near W49. The Contractor was reminded to clear the stagnant water to prevent mosquito breeding.
- 5.3.65. Stagnant water with silt and weeds were observed inside the u-channel at S34 and accumulated inside the drip trays of chemical containers on Lam Kam Bridge Pier 2 and TW2. The Contractor was reminded to remove the stagnant water with silt and weeds inside the drainage channel to maintain the drainage system properly. Also, sand bags should be provided to intercept the silt to prevent muddy water discharge to the public drainage. Stagnant water accumulated inside the drip trays should be disposed of as chemical waste.
- 5.3.66. Stagnant water was found accumulated inside the gullies and tyres on the bridge deck at Bridge 15A. The Contractor was reminded to remove the stagnant water.
- 5.3.67. Stagnant water was accumulated inside the drip tray of generator at W35A. The Contractor was reminded to clear the stagnant water and handle it as chemical waste. The Contractor was also reminded to remove the stagnant water inside the drip trays regularly to prevent any overflow occurred. The Contractor was recommended to provide skirt curtains for drip trays to prevent rainy water accumulated inside the drip tray during rainfall.

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

- 6.1. No exceedance of Action and Limit Level was recorded for 1-hour TSP monitoring in the reporting period.
- 6.2. No exceedance of Limit Level was recorded for 24-hour TSP monitoring in the reporting period
- 6.3. One (1) Action Level exceedance was recorded for 24-hour TSP monitoring at AM2 in the reporting period. The dust exceedance was considered not due to the Project works.
- 6.4. No Limit Level exceedance of construction noise monitoring was recorded in the reporting period.
- 6.5. There were three (3) noise related complaints followed up by Environmental Team in the reporting period, hence, three (3) Action Level exceedance of construction noise was recorded 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

- 6.6. 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. Seven (7) 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 complaint about dust emission from construction site of the Tolo Highway widening works near Ma Wo on 22 December 2011. Subsequently, the complainant made another call on 29 December 2011 regarding the same issue. As informed by the Contract 2 (HY2009/08 - Between Ma Wo and Tai Hang) Contractor, Gammon Construction Ltd, of Stage 1 of the Project and confirmed by the Engineer of the Project, demolition of haul road and slope excavation were being carried out on 22 and 29 December 2011 respectively at the work area nearby the residential flat of the complainant. Mitigation measures, including watering of haul road by nominated direct labour and erection of the barrier as a dust screen, were taken by the Contractor on the concerned days. With reference to the monitoring results recorded on days near to the day of complaint at the nearest monitoring station (AM1A- Sheung Wan Yiu) , the 24-hour TSP level on 19 December 2011 and 24 December 2011 was found to be 59.1ug/m³ and 107.9 ug/m³ respectively, which were below the action level of 176.6 ug/m³. Despite that the 24-hour TSP levels were below the action level, the Contractor was recommended to carry out enhanced mitigation measures, like providing dust net, extension of coverage of sprinkler system, informing the complainant in advance of any dusty activities to be carried out and regularly review the adequacy and effectiveness of dust suppression measure to suit the construction progress.

7.1.2. A noise related complaint was referred from HyD on 5 January 2012, the complainant (Mr. Che) expressed that noise was generated from the construction site of Widening of Tolo Highway near Ma Wo Tsuen on 23 December 2011. As informed by Contract 2 (HY2009/08 - Between Ma Wo and Tai Hang) Contractor, Gammon Construction Ltd, of Stage 1 of the Project and confirmed by the Engineer of the Project, rock breaking work was being carried out at the retaining wall W49 near Ma Wo Tsuen on the concerned day. The noise was likely generated from the rock breaking process. The Contractor provided mobile noise barrier at W49 and carried on the rock breaking work. The complainant made another call regarding the same issue on 31 December 2011. The rock breaking operation was suspended and all the rocks were removed at the concerned area. The Contractor will erect additional mobile noise barrier along W49 after the removal of rocks and prior to the rock breaking operation. The Contractor was reminded to ensure the following noise mitigation measures were implemented properly: provision of noise screening measures at rock breaking works areas, e.g. erection of temporary noise barriers; review the effectiveness of the noise mitigation measure to reduce the noise level; and better scheduling of noisy construction activities to minimize disturbance to nearby residents.

7.1.3. EPD referred a complaint about insufficient dust suppression measure was provided in the construction site of the Tolo Highway widening works near Ma Wo on 30 January 2012. As informed by the Contractor (Gammon Construction Ltd) and confirmed by the Engineer of the Project, no substantial dusty construction activity was being carried out on 30 January 2012 at the work area nearby the residential flat of the complaint. During our weekly environmental site inspection on 27 January 2012, water spraying was carried out to keep the slope and haul road wet; dust net was erected along the site boundary and tarpaulin sheet coverage and shotcreting was provided at W45-W46; vehicles were washed by the wheel washing facilities at gate no. 2 before leaving construction site. The complaint was considered as project related. Nevertheless, additional mitigation measures will be undertaken by the Contractor, including installation of

- 1 set of “water spray nozzle” at 4m above the existing catchpit adjacent to the villager’s footway at the crest of the slope.
- 1 set of “water spray nozzle” on top of existing dust screen, facing to the site haul road;
- 2 sets of “water spray nozzles” on top of site container offices, facing to the site haul road;
- 4 sets of “water spray nozzles” at 4m above ground, along “rock fall fence” / haul road opposite to RW W38; and

- “Mist spray nozzles” on top of existing dust screen along villager’s footway, at entrance of Subways at up-stream.

All the above nozzles will be installed with “Auto timer”. Water will spray in every 30 minutes and will be turn-off after 7:00pm. “Water spray nozzles” were installing along the haul road and the slope from W45 to W47 during environmental site inspection on 2 February 2012. With reference to the monitoring results recorded on days near to the day of complaint at the nearest monitoring station (AM1A-Sheung Wan Yiu), the 24-hour TSP level on 26 January 2012 was found to be 58.7ug/m³, which was below the action level of 176.6 ug/m³. Despite that the 24-hour TSP levels were below the action level, the Contractor was recommended and agreed that regularly review the adequacy and effectiveness of dust suppression measure to suit the construction progress. Follow-up site visit was conducted on 9 February 2012 to confirm the implementation of mitigation measure. Mist spray nozzles were installed on the top of the dust net. Water spraying was carrying out to keep the slope and haul road wet. No fugitive dust was observed arising from the construction works at the area.

- 7.1.4. EPD refer a complaint about construction noise was generated from the construction site of Widening of Tolo Highway near Ma Wo Tsuen on 22 February 2012 starting from 8:30a.m. As informed by the Contractor (Gammon Construction Ltd) and confirmed by the Engineer of the Project, excavation of base at retaining wall W56 and fixing rebar of base slab at bay 11 at retaining wall W38 were being carried out on 22 February 2012. The Contractor was reminded to carry out mitigation measures, including informing the nearby residents in advance for any noisy works to be carried out in the morning; erecting temporary noise barriers fitted with noise absorbing materials at W56 and other noisy construction works areas near Ma Wo Tsuen in the future; and regularly review the adequacy and effectiveness of noise mitigation measure. Erection of temporary noise barrier at W56 was implemented by the Contractor to minimize the noise impact from the works area on 7 March 2012.
- 7.1.5. ICC refer a complaint about noise nuisance generated by heavy machinery from the construction site of Widening of Tolo Highway opposite to Wai Tau Tsuen near Tai Wo Service Road West and Fanling Highway at the early morning on 20 March 2012. As informed by the Contractor (Gammon Construction Ltd) and confirmed by the Engineer of the Project, erection of overhead falsework was being carried out between New Lam Kam Flyover and Tai Wo Service Road West from 1:00 a.m. to 5:00 a.m. on 20 March 2012, a valid CNP(GW-RN0021-12) was granted for the mentioned works. The noise was potentially generated from the safety alarm system of aerial platform. The noise nuisance in the midnight is considered as project related. Light alarm was adopted, instead of the sound alarm, since 21 March 2012. The Contractor was advised to implement the noise mitigation measures, including strictly comply with the requirements of the approved CNP for night-time works; adopt light alarm during implement night-time works; and better scheduling of noisy construction activities to minimize disturbance to nearby residents. Follow-up site visit was conducted on 5 April 2012 to confirm the implementation of mitigation measure. Light alarm was adopted for safety alarm system of the aerial platform.
- 7.1.6. For the complaint received in September 2012, EPD referred a complaint (from a resident at Ma Wo) about no water spraying was provided for construction activities and caused dust emission in construction site of the Tolo Highway widening works near Ma Wo on 20 September 2012. As informed by the Contractor (Gammon Construction Ltd) and confirmed by the Engineer of the Project, backfilling work and concreting work were being carried out on 20 September 2012 at the work areas (W45-47 & W40) nearby the residential flat of the complainant. Mitigation measures, including erection of dust screen and water spraying of haul road and exposed slope, were taken by the Contractor during the construction activities.

With reference to the monitoring results recorded on days near to the day of complaint at the nearest monitoring station (AM1A- Sheung Wan Yiu), the 24-hour TSP level on 17 September 2012 was found to be 47.8ug/m³, which was 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 measures (e.g. sufficient water spraying) during backfilling works to prevent any fugitive dust generation. The Contractor should properly cover the non-working slopes and stockpiles by tarpaulin. The Contractor is recommended to implement automatic water sprinklers in site areas and increase the frequency of watering for haul road and exposed slope. For future dusty construction works (such as rock breaking, excavation, grouting, concreting and backfilling etc), the Contractor is recommended to inform the complainant before dusty activities to be carried out.

The Contractor should review the adequacy and effectiveness of dust suppression measures regularly to suit the construction progress.

As photo records provided by the Contractor (Gammon Construction Ltd) on 21 September 2012, several dust mitigation measures (such as Tarpaulin sheet coverage for exposed slope, dust screen along site boundary, auto-water sprinkler at site haul road and exposed slope, continues water spraying at haul road / site area) were implemented in the work areas W45-47 & W40.

Follow-up site visit was conducted on 27 September 2012 to confirm the implementation of mitigation measure. During the follow-up site inspection, no fugitive dust generation arising from the construction works at the areas (W45-47 & W40) was observed (dust screen along the site boundary had been erected; auto-water sprinkler for water spraying of haul road had been implemented; exposed slope, site haul road and stockpiles had been dampened)

- 7.1.7. For the complaint received in October 2012, EPD referred a complaint (from a resident at Ma Wo) on 9 October 2012 about dust emission in construction site of the Tolo Highway widening works near Ma Wo on 8 October 2012, subsequently, the complainant made another call on 15 October 2012 regarding the same issue. As informed by the Contractor (Gammon Construction Ltd) and confirmed by the Engineer of the Project, backfilling work was being carried out on 8 October 2012 and 15 October 2012 at the work areas W45-47 nearby the residential flat of the complainant. Mitigation measures, including erection of dust screen (dismantled on 13 October 2012 due to safety reasons and relocation of dust screen conducted on 15 October 2012), automatic sprinkler system and manual spraying by workers for haul road and exposed slope, covering non-working slope by tarpaulin were taken by the Contractor.

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 5 October 2012, 11 October 2012 and 17 October 2012 were found to be 57.1ug/m³, 77.9ug/m³ and 84.1ug/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:

- Enhance the dust mitigation measures (e.g. water spraying) during backfilling works to prevent any fugitive dust generation;
- Erect dust screen along at the work areas W45-47 before dusty activities to be carried out;
- Increase the frequency of watering for haul road and exposed soil stockpile (from every 10 minutes to every 7 minutes);
- Cover the backfilling surface after work;
- Extend the tarpaulin sheet covering area to the exposed surface at lower part of non-working slope;
- Cover the non-working slope by clean and proper tarpaulin sheets;
- Erect dust screen in backfilling area at W47;
- Cover dusty material carrying by dump trucks by mechanical cover even within the work area W45-47;
- Maintain soil surface wet before loading and unloading activities;
- Review the adequacy and effectiveness of dust suppression measures more frequently to suit the construction progress; and
- Inform the complainant before dusty activities to be carried out, such as rock breaking, excavation, grouting and backfilling etc.

Follow-up site visit was conducted on 1 November 2012 to confirm the implementation of mitigation measure. During site inspection on 1 November 2012, no dusty activity (i.e. loading and unloading activities) and dump truck was observed in work area W45-47. Several dust mitigation measures were implemented at the work area W45-47 as below:

- Dust screen was erected along at the work area W45-47;
- Automatic sprinklers were operated for watering of site haul roads / site areas;

- Water spraying for site haul roads / site areas was provided by worker;
- Site haul road / site areas were dampened;
- Tarpaulin sheet covering area was extended to the exposed surface at lower part of non-working slope;
- Non-working slopes was properly covered by tarpaulin sheets; and
- Impermeable sheet was erected in backfilling area at W47.

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 W45-47 and the deficiencies were also rectified properly. No fugitive dust arising from the work area W45-47 was observed.

- 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. Only one (1) 24-hour TSP monitoring exceedance was recorded in the reporting period and it was considered not related to the Project works. All the rest of 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 TSP monitoring results complied with the Action / Limit Level in the reporting period. However, one (1) Action Level exceedance of 24-hour TSP was recorded, but it was considered not related to the Project works. No Limit Level exceedance of 24-hour TSP was recorded in the reporting period.
- 11.4. There were three (3) noise related complaints followed up by Environmental Team in the reporting period. Hence, three (3) Action Level exceedances were recorded. No Limit Level exceedance for construction noise was recorded at all monitoring stations in the reporting period.
- 11.5. Seven (7) 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.