

Highways Department

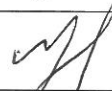

Agreement No. CE 20/2009 (EP)

**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**

**Quarterly EM&A Summary Report
for August 2012 – October 2012**

[12/2012]

	Name	Signature
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Version:	Rev. 0	Date: 10 January 2013
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9 January 2013
By Fax (2805 5028) and Post

Attn.: Mr. James Penny

Dear Sir,

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

We refer to the Quarterly EM&A Summary Report for August 2012 to October 2012 for the captioned Project submitted by ET via email on 31 December 2012 and 9 January 2013. We confirm we have no comment.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED

Terence Kong
Independent Environmental Checker

c.c. HyD – Mr. Raymond T W Kong / Mr. Dennis Wong / Mr. William Chiang (Fax: 2761 4864)
ETL, AECOM – Mr. Y T Tang (Fax: 2317 7609)

TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	1
1 INTRODUCTION	3
2 ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS	6
3 AIR QUALITY MONITORING	7
4 CONSTRUCTION NOISE MONITORING	9
5 ENVIRONMENTAL SITE INSPECTION AND AUDIT	10
6 ADVICE ON THE SOLID AND LIQUID WASTE MANAGEMENT STATUS	12
7 SUMMARY OF NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY	12
8 ENVIRONMENTAL COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS	13
9 COMMENTS, RECOMMENDATIONS AND CONCLUSIONS	14

List of Tables

Table 1.1	Contact Information of Key Personnel
Table 3.1	Summary of Number of Monitoring Events for 1-hr & 24-hr TSP Concentration
Table 3.2	Summary of Number of Exceedances for 1-hr & 24-hr TSP Monitoring
Table 4.1	Summary of Number of Monitoring Events for Construction Noise
Table 4.2	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	Construction Programmes
Appendix C	Implementation Schedule of Environmental Mitigation Measures (EMIS)
Appendix D	Summary of Action and Limit Levels
Appendix E	Graphical Presentation of Impact Air Quality Monitoring Results
Appendix F	Graphical Presentation of Impact Daytime Construction Noise Monitoring Results
Appendix G	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) issued by EPD on 23 December 2008. Subsequently, EPD issued a Variation of Environmental Permit (EP-324/2008/A) (VEP) on 31 January 2012.

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

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

The construction phase of Stage 1 under the EPs and the Environmental Monitoring and Audit (EM&A) programme for Stage 1 of the Project commenced on 23 November 2009. The impact environmental monitoring and audit includes air quality and noise monitoring.

This report documents the findings of EM&A works conducted in the period between 1 August 2012 and 31 October 2012. As informed by the Contract 1 Contractor (CSHK), construction activities in the reporting period were:-

- At-grade Road Construction;
- Bridge Construction;
- Demolition of Central Dividers;
- Drainage works;
- Noise Barrier Footing Construction and Panel Installation;
- Pile Cap Construction;
- Retaining Wall Construction;
- Road paving;
- Slope works;
- Soil Nails Works;
- Temporary Shoring, Sheetpiling and Excavation; and
- Tree Felling & Transplantation.

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 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.

Environmental Monitoring Works

A summary of monitoring and audit activities conducted in the reporting quarter is listed below:-

24-hour TSP monitoring	16 sessions
1-hour TSP monitoring	48 sessions
Daytime Noise monitoring	13 regular sessions
Environmental Site inspection	14 sessions (Contract 1) / 14 sessions (Contract 2)

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 quarter.

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

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

Breaches of Action and Limit Levels for Noise

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

Complaint, Notification of Summons and Successful Prosecution

There were two (2) air quality related complaints followed up by Environmental Team in reporting quarter. Investigations were carried out. The findings, proposed mitigation measures and follow-up site visit findings were submitted to all relevant parties.

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

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) issued by EPD on 23 December 2008. Subsequently, EPD issued a Variation of Environmental Permit (EP-324/2008/A) (VEP) on 31 January 2012.
- 1.4. 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 (HyD) as the consultants for the design and construction assignment for the Tolo project under Agreement No. CE 58/2000 Supplementary Agreement No. 3 (SA3) (i.e. the Engineer for the Contracts).
- 1.8. China State Construction Engineering (Hong Kong) Ltd. (CSHK) was commissioned as the Contractor of Contract 1 of Stage 1 of the Project, while Gammon Construction Limited (GCL) was commissioned as the Contractor of Contract 2 of Stage 1 of the Project.
- 1.9. AECOM Asia Co. Ltd. was employed by Highways Department as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) works for Stage 1 of the Project and Mott MacDonald Hong Kong Ltd. acts as the Independent Environmental Checker (IEC) for the Contracts.
- 1.10. The construction phase of Stage 1 under the EPs 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 twelfth Quarterly EM&A Summary 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 August 2012 and 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	2667 4000
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 Limited)	Independent Environmental Checker	Terence Kong	2828 5919	2827 1823
Contractor of Stage 1, Contract 1 (China State Construction Engineering (Hong Kong) Limited)	Site Agent	Eddie Tang	9863 7686	2667 5666
	Environmental Officer	Michael Tsang	9277 4956	2667 5666
Contractor of Stage 1, Contract 2 (Gammon Construction Limited)	Site Agent	John Chan	3126 1202	2559 3410
	Environmental Officer	Thomson Chang	9213 6569	2559 3410
		Crispin Ao	9223 8773	2559 3410
Ao Ho Fo	9220 5848	2559 3410		
ET of Stage 1 (AECOM Asia Company Limited)	ET Leader	Y T Tang	3922 9393	2371 7609

Summary of Construction Works

- 1.14. The construction phase of Stage 1 under the EPs commenced on 23 November 2009. Details of the construction works carried out by the Contract 1 Contractor (CSHK) in this reporting period are listed below:-
- At-grade Road Construction;
 - Bridge Construction;
 - Demolition of Central Dividers;
 - Drainage works;
 - Noise Barrier Footing Construction and Panel Installation;
 - Pile Cap Construction;
 - Retaining Wall Construction;
 - Road paving;
 - 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 Construction Programmes are shown in Appendix B.
- 1.17. The general layout plan of the Project site showing the contract areas is shown in Figure 1.1.
- 1.18. The environmental mitigation measures implementation schedule are presented in Appendix C.

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.
- 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).
- 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 and are given in Appendix D.

Environmental Mitigation Measures

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

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 (AM1A, AM2, AM3 and AM4A), in accordance with the updated EM&A Manual.
- 3.2. The weather was mostly sunny, with several fine, cloudy and rainy days in the reporting quarter. The major dust source in the reporting period included construction activities from Stage 1 of the Project, as well as nearby traffic emissions.
- 3.3. The number of monitoring events and exceedances recorded in each month of the reporting quarter are presented in Table 3.1 and Table 3.2 respectively.

Table 3.1 Summary of Number of Monitoring Events for 1-hr & 24-hr TSP Concentration

Monitoring Parameter	Location	No. of monitoring events		
		Aug 12	Sep 12	Oct 12
1-hr TSP	AM1A	18	15	15
	AM2	18	15	15
	AM3	18	15	15
	AM4A	18	15	15
24-hr TSP	AM1A	6	5	5
	AM2	6	5	5
	AM3	6	5	5
	AM4A	6	5	5

Table 3.2 Summary of Number of Exceedances for 1-hr & 24-hr TSP Monitoring

Monitoring Parameter	Location	Level of Exceedance	Level of Exceedance			
			Aug 12	Sep 12	Oct 12	
1-hr TSP	AM1A	Action	0	0	0	
		Limit	0	0	0	
	AM2	Action	0	0	0	
		Limit	0	0	0	
	AM3	Action	0	0	0	
		Limit	0	0	0	
	AM4A	Action	0	0	0	
		Limit	0	0	0	
		Total	0	0	0	
	24-hr TSP	AM1A	Action	0	0	0
			Limit	0	0	0
		AM2	Action	1	0	0
Limit			0	0	0	
AM3		Action	0	0	0	
		Limit	0	0	0	
AM4A		Action	0	0	0	
		Limit	0	0	0	
		Total	1	0	0	

- 3.4. All 1-hour TSP results were below the Action and Limit Level at all monitoring locations in the reporting quarter.
- 3.5. All 24-hour TSP results were below the Limit Level at all monitoring locations in the reporting period.
- 3.6. 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.

3.7. The graphical plots of the impact air quality monitoring results are provided in Appendix E.

4 CONSTRUCTION NOISE MONITORING

- 4.1. Construction noise monitoring was conducted at the 7 monitoring stations (NM1A, NM2, NM3, NM4, NM5, NM6 and NM7) for at least once per week during 07:00 – 19:00 in the reporting quarter.
- 4.2. The 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 major noise source during the noise monitoring.
- 4.3. The number of construction noise monitoring events and exceedances are summarized in Table 4.1 and Table 4.2 respectively.

Table 4.1 Summary of Number of Monitoring Events for Construction Noise

Monitoring Parameter	Location	No. of monitoring events		
		Aug 12	Sep 12	Oct 12
	NM1A	5	4	4
	NM2	5	4	4
	NM3	5	4	4
	NM4	5	4	4
	NM5	5	4	4
	NM6	5	4	4
	NM7	5	4	4

Table 4.2 Summary of Number of Monitoring Exceedances for Construction Noise

Monitoring Parameter	Location	Level of Exceedance	Level of Exceedance		
			Aug 12	Sep 12	Oct 12
	NM1A		0	0	0
	NM2		0	0	0
	NM3		0	0	0
	NM4		0	0	0
	NM5		0	0	0
	NM6		0	0	0
	NM7		0	0	0
		Total	0	0	0

- 4.4. 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 F. No Action/Limit exceedance of construction noise monitoring was recorded in the reporting quarter.
- 4.5. There was no noise related complaints followed up by Environmental Team in the reporting period. Hence, no Action/Limit Level exceedance was recorded.

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 quarter, 14 and 13 site inspections were carried out for each of Contract 1 and Contract 2 of the Project.

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

Air Quality

5.2.1. 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

5.2.2. 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

5.2.3. 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

5.2.4. 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.

5.2.5. 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.

5.2.6. 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.

5.2.7. 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.

5.2.8. 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.

5.2.9. 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

5.2.10. 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.

- 5.2.11. 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.
- 5.2.12. 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

- 5.2.13. No adverse observation was identified in the reporting quarter.

Miscellaneous

- 5.2.14. 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. 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.
- 5.3.2. The Contractor was reminded to cover the stockpiles at Area W56B by tarpaulin sheet after work.

Noise

- 5.3.3. No adverse observation was identified in the reporting quarter.

Water Quality

- 5.3.4. 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.
- 5.3.5. 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.
- 5.3.6. 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.
- 5.3.7. 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.
- 5.3.8. 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.
- 5.3.9. 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

- 5.3.10. 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.
- 5.3.11. 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.
- 5.3.12. 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
- 5.3.13. 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

- 5.3.14. No adverse observation was identified in the reporting quarter.

Miscellaneous

- 5.3.15. 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 ADVICE ON THE SOLID AND LIQUID WASTE MANAGEMENT STATUS

- 6.1.1 The Contract 1 Contractor (CSHK) and the Contract 2 Contractor (GCL) are registered as chemical waste producers for Stage 1 of the Project. C&D material sorting was carried out on site. Sufficient numbers of receptacles were available for general refuse collection.
- 6.1.2 As advised by the Contract 1 Contractor (CSHK), 644m³ of inert C&D material was disposed as public fill to Tuen Mun 38 (of which 6m³ was broken concrete), while 299m³ of general refuse were disposed at NENT landfill. 29,187kg of metal, 351kg of paper/cardboard and 10,650kg of plastic were collected by recycling contractor in the reporting quarter. 5,344m³ and 3,994m³ of inert C&D materials were reused on site and in NENT for backfilling respectively. No chemical waste was collected by licensed contractor in the reporting period.
- 6.1.3 As advised by the Contract 2 Contractor (GCL), 675m³ of inert C&D material were disposed to Tuen Mun 38 and 1,785m³ of general refuse was disposed to NENT landfill in the reporting period.
- 6.1.4 The Contract 1 Contractor (CSHK) and the Contract 2 Contractor (GCL) are advised to maintain on site waste sorting and recording system and maximize reuse / recycle of C&D wastes.

7 SUMMARY OF NON-COMPLIANCE (EXCEEDANCES) OF THE ENVIRONMENTAL QUALITY

- 7.1. All 1-hour TSP monitoring results complied with the Action / Limit Levels in the reporting period.
- 7.2. All 24-hour TSP monitoring results complied with the Limit Levels in the reporting period.
- 7.3. 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.
- 7.4. No Action/Limit Level exceedance of construction noise monitoring was recorded in the reporting period.
- 7.5. There was no noise related complaint followed up by Environmental Team in the reporting period..

8 ENVIRONMENTAL COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

- 8.1. A 24-hour complaint hotline at 6628 8366 has been established for Stage 1 (both Contract 1 and Contract 2) of the Project. Also a 24-hour hotline at 8201 6669 is established for Contract 1 of the Project. The hotline numbers are displayed at the site entrances, fencings and project signboards, as well as printed on publications for the public, such as newsletters.
- 8.2. No notification of summons and prosecution was received in the reporting quarter.
- 8.3. There were two (2) air quality related complaints followed up by Environmental Team in reporting period as the below:

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 $47.8\mu\text{g}/\text{m}^3$, which was below the action level of $176.6\mu\text{g}/\text{m}^3$.

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).

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 $57.1\mu\text{g}/\text{m}^3$, $77.9\mu\text{g}/\text{m}^3$ and $84.1\mu\text{g}/\text{m}^3$ respectively, which were below the action level of $176.6\mu\text{g}/\text{m}^3$.

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.

- 8.4. Cumulative statistics on complaints, notifications of summons and successful prosecutions are summarized in Appendix G.

9 COMMENTS, RECOMMENDATIONS AND CONCLUSIONS

Comments on Mitigation Measures

- 9.1. According to the environmental site inspections performed in the reporting quarter, the following recommendations were provided:-

Air Quality Impact

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

Construction Noise Impact

- Properly erect the temporary noise barriers in accordance with the Environmental Permit requirement.
- Noise barriers should be closely packed and properly aligned to ensure effective noise reduction.
- Noisy operations should be oriented to a direction away from sensitive receivers as far as possible.
- Sound insulation materials shall be wrapped at the breaker tip for concrete breaking works.
- Noise Emission Label (NEL) shall be affixed to the air compressor and hand-held breaker operating within works area.
- Better scheduling of construction works to minimize noise nuisance.

Water Quality Impact

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

Chemical and Waste Management

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

Landscape and Visual Impact

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

Recommendations on EM&A Programme

- 9.2. The impact air quality and noise monitoring programme ensured that any deterioration in environmental condition was readily detected and timely actions taken to rectify any non-compliance. Assessment and analysis of monitoring results collected demonstrated the environmental acceptability of Stage 1 of the Project. The weekly environmental site inspections ensured that all the environmental mitigation measures recommended in the ERR were effectively implemented.
- 9.3. The EM&A programme effectively monitored the environmental impacts from the construction activities and no particular recommendation was advised for the improvement of the programme.

Conclusions

- 9.4. The construction phase and EM&A programme of Stage 1 of the Project commenced on 23 November 2009.

- 9.5. Air quality and noise monitoring, weekly site inspections were carried out in the reporting quarter, in accordance with the updated EM&A manual.
- 9.6. All 1-hour TSP monitoring results complied with the Action / Limit Level in the reporting quarter.
- 9.7. All 24-hour TSP monitoring results complied with the Limit Level in the reporting quarter.
- 9.8. One (1) Action Level exceedance was recorded for 24-hour TSP monitoring at AM2 in the reporting quarter. The dust exceedance was considered not due to the Project works.
- 9.9. There was no noise related complaints followed up by Environmental Team in the reporting period. No Action/Limit Level exceedance of construction noise monitoring was recorded in the reporting quarter.
- 9.10. There were two (2) air quality related complaints followed up by Environmental Team in reporting quarter. Investigations were carried out. The findings, proposed mitigation measures and follow-up site visit findings were submitted to all relevant parties.
- 9.11. No notification of summons and prosecution was received in the reporting quarter.