

Highways Department

**Agreement No. HMW  
5/2009 (EP) Traffic  
Improvements to Tuen  
Mun Road Town Centre  
Section**

**Quarterly Environmental  
Monitoring and Audit  
Summary Report (May  
2013 to July 2013)**

Final



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## Executive Summary

This is the twelfth quarterly Environmental Monitoring and Audit (EM&A) summary report prepared by Ove Arup & Partners Hong Kong Limited (Arup), the designated Environmental Team (ET), for the Project "Traffic Improvements to Tuen Mun Road Town Centre Section". This report presents the results of EM&A works conducted for the period from 1 May 2013 to 31 July 2013.

### Environmental Monitoring Works – Breaches of Action and Limit Levels

#### *Air Quality*

All 24-hour TSP measurements during the reporting period were below the Action and Limit Level. No exceedance of Action and Limit Level was found.

#### *Noise*

Totally 3 limit level exceedances (0 in May 13, 3 in Jun 13 and 0 in Jul 13) of noise monitoring were recorded from the monitoring data at locations N1 during the reporting period, which triggered the Event and Action Plan for remedial action. Based on the on-site observations and interpretation from the results, it was revealed that the exceedances were mainly caused by traffic noise along Tuen Mun Road and was not related to the construction activities. No particular remedial work is required.

Two noise complaints, hence, two Action Level exceedances, were recorded in the reporting period. Construction works were carried out during the restricted hours, the conditions stipulated in CNPs of related construction works were strictly followed by the Contractor. No non-compliance was recorded.

#### *Landscape and Visual Audit*

In the reporting period, landscape and visual site audit in accordance with the requirements stipulated in the EM&A manual were conducted. Total 521 trees were felled and the pruning of the transplanted trees was carried out during the reporting period, no substantial change of LR, LCA and VSR was noted.

#### *Waste Disposal*

Inert C&D materials with actual amount of 6,215.95 m<sup>3</sup> were generated and disposed of at public fills at Tuen Mun Area 38 in the reporting period. 195 m<sup>3</sup> general refuse were generated and disposed of at WENT landfill during the reporting period.

### Environmental Auditing

The environmental site audits were conducted on a weekly basis. No non-conformance to the environmental requirements was identified during the reporting period.

### Complaint Log

Two environmental complaints regarding noise issue were recorded during the reporting period. After the investigations, it is concluded that the complaints were attributable to the Contract. The corresponding mitigation measure due to the complaint was recommended to be carried out by the Contractor.

### Notifications of Summons and Successful Prosecutions

No summonses or prosecution related to the environmental issues were made against the Project in the reporting period.

# 1 Project Information

## 1.1 Project Background and Programme

Ove Arup & Partners Hong Kong Limited (Arup) was appointed by Highways Department (HyD) as the Environmental Team (ET) for *Agreement No. CE22/2005 (HY) Supplementary Agreement 1 Traffic Improvements to Tuen Mun Road Town Centre Section* (the Project) under Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section. The Project was commenced on August 2010 and to be completed on January 2014. Location of the works area is indicated in **Figure 1.1**.

The Project involves widening the following sections of TMR from dual-two carriageway to dual-three carriageway:

- Wong Chu Road Section, (from Wong Chu Road Interchange to Tuen Hing Road);
- Tuen Mun Town Plaza Section, (from Yan Oi Town Square to Tuen Hing Road).

The Project is a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). Environmental Monitoring and Audit (EM&A) work is required in accordance with the conditions stipulated in the Environmental Permit (EP) (EP-342/2009/C) and the EM&A Manual of the Project.

The rolling construction programme during the reporting period is attached in **Appendix A**. The major construction activities carried out by the Contractor in the reporting period are summarized in **Table 1.1**.

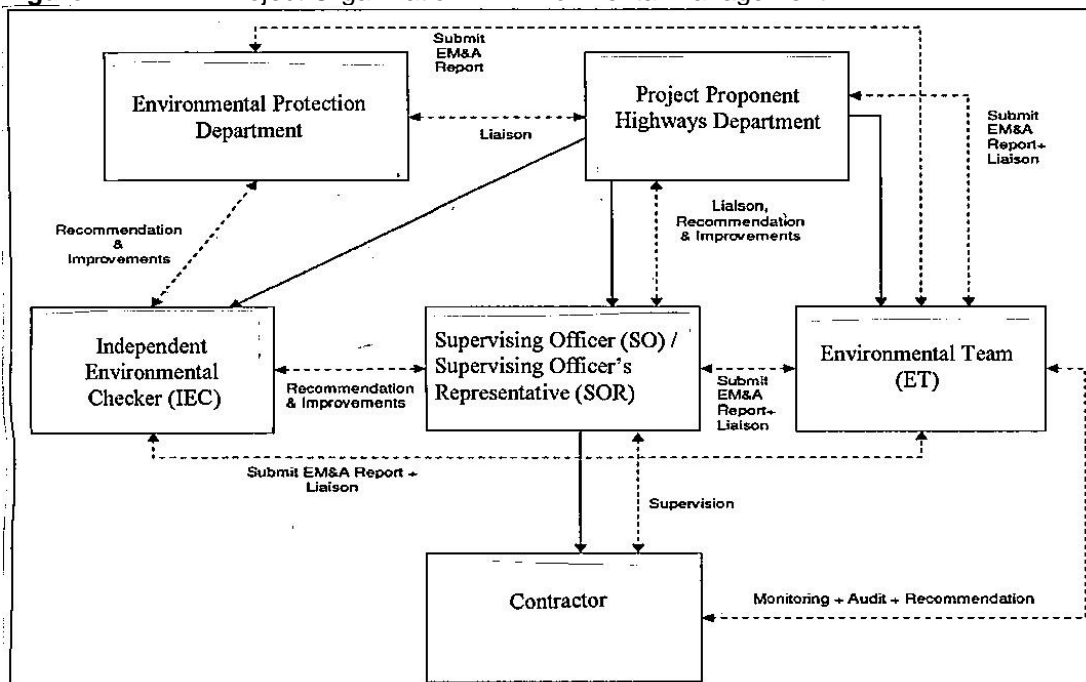
**Table 1.1** Construction activities in the reporting period

Locations	Major Works Undertaken
All area	Footbridge construction and demolition, noise barrier construction; piling works, underground utilities and drainage diversion, Erection of noise barrier/ enclosure steelworks

## 1.2 Project Organization

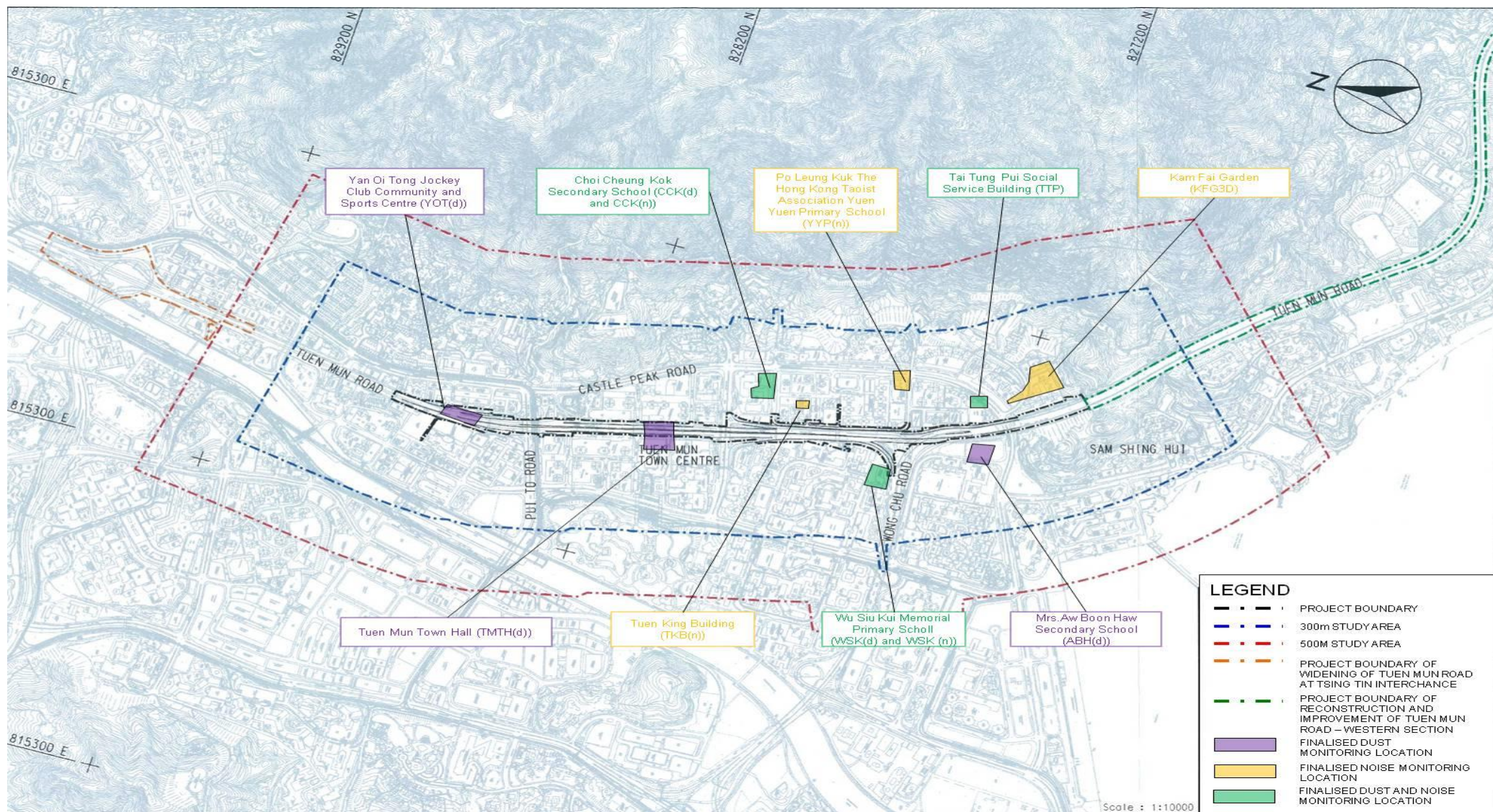
The Project organization structure in relation to the environmental management is shown in **Figure 1.2**. Contacts of key environmental staff of the Project are shown in **Table 1.2**.

**Figure 1.2** Project Organization – Environmental Management





**Figure 1.1** Location of works area and air, noise environmental monitoring stations



**Table 1.2** Contacts of key environmental staff

Organization	Name	Telephone
<b>Environmental Protection Department</b>		
Environmental Protection Officer (Strategic Assessment)22	Thomas To	2835 1103
<b>Project Proponent</b>		
Highways Department: Senior Engineer	Peter Law	2762 3539
<b>Supervising Officer / Supervising Officer's Representative</b>		
AECOM Asia Co. Ltd.: Chief Resident Engineer	Patrick Lee	2969 9200
<b>Independent Environmental Checker</b>		
ENVIRON Hong Kong Limited: Independent Environmental Checker	David Yeung	3743 0717
<b>Environmental Team</b>		
Ove Arup & Partners Hong Kong Ltd: Environmental Team Leader	Coleman Ng	2268 3097
<b>Contractor</b>		
China Harbour Engineering Company Limited		
Site Agent	W.S. Ng	2403 0529
Environmental Officer	Marko Chan	2403 0527

## 2 EM&A Requirements

### 2.1 Monitoring Parameters

Air quality monitoring shall be measured in terms of the TSP levels for 24-hour periods. For noise monitoring, construction noise shall be measured in terms of the A-weighted equivalent continuous sound pressure level ( $L_{eq}$ ). Furthermore, the monitoring of the implementation of the landscape and visual mitigation measures shall be checked to ensure that they are fully required. **Table 2.1 and Figure 1.1** show the names and locations of the monitoring locations. The monitoring parameters, frequency and performance limits are summarised in **Table 2.2**.

**Table 2.1** Summary of air and noise monitoring stations

ID	Premise
<b>Air</b>	
AM1	Chung Sing Benevolent Society Mrs. Aw Boon Haw Secondary School
AM2	Tung Wah Group of Hospitals Tai Tung Pui Social Service Building
AM3	Shun Tak Fraternal Association Wu Siu Kui Memorial Primary School
AM4	The Chinese Manufacturers' Association Of Hong Kong Choi Cheung Kok Secondary School
AM5	Tuen Mun Town Hall
AM6	Yan Oi Tong Jockey Club Community and Sports Centre
<b>Noise</b>	
N1	Kam Fai Garden
N2	Tung Wah Group of Hospitals Tai Tung Pui Social Service Building
N3	Po Leung Kuk The Hong Kong Taoist Association Yuen Yuen Primary School
N4	Shun Tak Fraternal Association Wu Siu Kui Memorial Primary School
N5	Tuen King Building
N6	The Chinese Manufacturers' Association Of Hong Kong Choi Cheung Kok Secondary School



**Table 2.2** Monitoring parameters, frequency, locations and performance limits

Monitoring	Parameters	Frequency	Location	Action Level	Limit Level
Air	1-hour TSP	3 times every 6 days <sup>(Note 1)</sup>	AM1	290 µg/m <sup>3</sup>	500 µg/m <sup>3</sup>
			AM2	291 µg/m <sup>3</sup>	
			AM3	287 µg/m <sup>3</sup>	
			AM4	292 µg/m <sup>3</sup>	
			AM5	286 µg/m <sup>3</sup>	
			AM6	290 µg/m <sup>3</sup>	
	24-hour TSP	Once every 6 days	AM1	146 µg/m <sup>3</sup>	260 µg/m <sup>3</sup>
			AM2	151 µg/m <sup>3</sup>	
			AM3	150 µg/m <sup>3</sup>	
			AM4	150 µg/m <sup>3</sup>	
			AM5	146 µg/m <sup>3</sup>	
			AM6	147 µg/m <sup>3</sup>	
Noise	0700 - 1900 hour on normal weekdays - $L_{eq(30min)}$	Once per week	N1, N2 & N5	When one documented complaint is received	75 dB(A)
			N3, N4 & N6		70/65 <sup>(Note 3)</sup>
	0700 - 2300 hours on holiday; and 1900 - 2300 hours on all other days - $L_{eq(5min)}$ <sup>(Note 2)</sup>	--	N1, N2, N3, N4, N5 & N6		--
					2300 - 0700 hours of next day - $L_{eq(5min)}$ <sup>(Note 2)</sup>
Landscape and Visual	Landscape resources (LR), landscape character area(LCA) and view sensitive receiver (VSR) <sup>(Note 4)</sup>	Twice site audit per month	Entire site area	N/A	N/A

**Notes:**

- 1-hr TSP monitoring would be required in case of receiving complaints
- If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.
- For normal day-time working hours, the noise criteria are 70 dB(A) and 65 dB(A) for normal reaching periods and examination period respectively.
- The details of each LR, LCA and VSR are summarized in **Appendix F**.

## 2.2 Environmental Quality Performance Limits

All the monitoring results will be checked against the Action and Limit levels described in the Baseline Monitoring Report, of which they are summarised in **Table 2.1**.

## 2.3 Environmental Mitigation Measures

The environmental mitigation measures carried out were basically followed the requirements described in the EIA Report. Major mitigation measures during the construction phase in relation air quality, noise, water quality, ecology, waste management as well as landscape and visual are summarised in **Appendix B**.

# 3 Implementation Status

## 3.1 Implementation Status of Mitigation Measures

Environmental site inspections were carried out on a weekly basis to monitor environmental issues on the construction sites to ensure that all mitigation measures were implemented timely and properly. Key mitigation measures observed were: vehicles were washed to remove any dusty materials from its body and wheels before leaving a construction site, quiet powered mechanical equipment (QPME) were used as well as sufficient waste disposal points were provided and regular collection for disposal.



**Table 3.1** summaries the site inspections in the reporting period and corresponding follow-up status by the Contractor.

**Table 3.1** Key findings of weekly environmental site audit in the reporting period

Monitoring Parameter	Location	Inspection Date	Key Observations & Recommendations	Contractor's Follow-Up Status
Air Quality	Siu On Footbridge	13-Jun-13	An excavator was indentified with dark smoke emissions. The Contractor was reminded to regularly maintain equipment in order to avoid emissions.	The reminder has been noted. Closed on 20 Jun 13.
Water Quality	TMT Plaza	2-May-13	Tarpaulin sheet should be placed on the entrance to minimize the mud carried by vehicles.	Tarpaulin sheet has been provided. Closed on 9 May 13.
	Pui To Road	9-May-13	The Contractor was reminded to clear the accumulated water inside the trap of noise barrier footing.	The reminder has been noted. Closed on 16 May 13.
	Yan Oi Tong Bridge (Central Median)	16-May-13	The Contractor was reminded to properly treat the muddy water prior to discharge.	The reminder has been noted. Closed on 23 May 13.
	Chi Lok Bridge (Central Median)	16-May-13	Surface runoff overflowing to Tuen Mun Road was observed. The Contractor should rectify the overflowing immediately.	Sandbag bunding has been increased. Closed on 23 May 13.
	Tsing Sin Playground	16-May-13	Bunding should be provided at the site entrance to avoid surface runoff overflowing to public road.	Sand bag bunding has been placed. Closed on 23 May 13.
	All Areas	23-May-13	The Contractor was reminded to clear the stagnant water to avoid accumulation.	The reminder has been noted. Closed on 30 May 13.
	Pui To Road	6-Jun-13	Stagnant water should be drained to avoid accumulation.	Stagnant water has been drained. Closed on 13 Jun 13.
	S1 Bridge	13-Jun-13	The Contractor was reminded to regularly remove stagnant water from the works area.	The reminder has been noted. Closed on 20 Jun 13.
	On Ting Estate	20-Jun-13	Sandbag bundings should be provided at the site boundary to avoid surface runoff from site to public area.	Bundings have been provided. Closed on 27 Jun 13.
	Yan Oi Circuit	4-Jul-13	The Contractor should improve the condition of site access.	Site access has been cleaned. Closed on 11 Jul 13.
	Yan Oi Circuit	11-Jul-13	The Contractor was reminded to clear the stagnant water in the U-channel.	The reminder has been noted. Closed on 18 Jul 13.
	On Ting Estate	25-Jul-13	The site access should be clear from mud to minimize site runoff generation into public drainage.	Site access has been cleaned. Closed on 1 Aug 13.

Monitoring Parameter	Location	Inspection Date	Key Observations & Recommendations	Contractor's Follow-Up Status
	All areas	25-Jul-13	Accumulated rain water should be drained/ pumped out.	Accumulated water has been drained. Closed on 1 Aug 13.
Noise	Kam Fai Garden	16-May-13	Acoustic blanket should be wrapped on the breaking machine head during operation.	The breaking machine head has been wrapped with acoustic blanket. Closed on 23 May 13.
	Siu On Footbridge	20-Jun-13	The Contractor was reminded to cover the engine hood of the excavator during operation.	The reminder has been noted. Closed on 27 Jun 13.
	Yan Oi Circuit	27-Jun-13	The Contractor was reminded to affix valid noise label to all hand-held breakers.	The reminder has been noted. Closed on 4 Jul 13.
	Yan Oi Circuit	4-Jul-13	The Contractor was reminded to display the most updated license at the site entrance.	The reminder has been noted. Closed on 11 Jul 13.
Waste / Chemical Management	Siu On Footbridge	2-May-13	Unused stockpile should be covered entirely. Disposal should be arranged as soon as possible.	Disposal has been arranged. Closed on 9 Jun 13.
	All Areas	30-May-13	The Contractor was reminded to dispose of C&D waste on a regular basis.	The reminder has been noted. Closed on 6 Jun 13.
	Rosedale Garden	6-Jun-13	C&D materials should be kept away from the tree protection.	Fencing has been provided in the tree protection zone. Closed on 13 Jun 13.
	S1 Bridge	13-Jun-13	The Contractor was reminded to ensure that all drip trays are properly plugged and sealed.	The reminder has been noted. Closed on 20 Jun 13.
	Yan Oi Circuit	27-Jun-13	Oil drum should be provided with drip tray.	Drip tray has been provided. Closed on 4 Jul 13.
	Yan Oi Footbridge	18-Jul-13	The Contractor should remove the general refuse and C&D waste to avoid accumulation.	General refuse and C&D waste have been removed. Closed on 25 Jul 13.

## 4 Environmental Monitoring Results

### 4.1 Air Monitoring Results and Observations

#### 4.1.1 Air Quality Monitoring Results

Monitoring of 24-hour TSP were conducted at monitoring stations AM1, AM2, AM3, AM4, AM5 and AM6 in the reporting period. All monitoring data and graphical presentation of the monitoring results are provided in **Appendix C** and are summarised in **Table 4.1**. Wind data obtained from the Hong Kong Observatory – Tuen Mun anemometer station during the reporting period is presented in **Appendix D**.

**Table 4.1** Summary of 24-hour TSP monitoring results in the reporting period

Location	Average 24-hour TSP Concentration, $\mu\text{g}/\text{m}^3$ (Range)			
	May 13	Jun 13	Jul 13	Mean
AM1	28.0 (19 - 45)	17.7 (13 - 26)	21.5 (12 - 51)	21.6 (8 - 48)
AM2	20.6 (14 - 26)	18.8 (12 - 24)	16.7 (9 - 35)	19.5 (10 - 35)
AM3	29.8 (9 - 51)	18.0 (15 - 26)	16.4 (13 - 22)	21.1 (9 - 49)
AM4	26.7 (16 - 54)	17.3 (10 - 36)	19.0 (11 - 44)	22.5 (12 - 45)
AM5	20.5 (19 - 22)	18.5 (11 - 32)	17.1 (12 - 35)	22.7 (13 - 32)
AM6	24.3 (15 - 33)	39.3 (22 - 82)	21.4 (15 - 27)	27.4 (8 - 53)

All 24-hour TSP measurements during the reporting period were below the Action/Limit Level. No exceedance of action and limit level was found.

#### 4.1.2 General Observations

Major construction works including site clearance, site hoarding construction, ground investigation and underground utilities diversion were implemented during the reporting period.

### 4.2 Noise Monitoring Results and Observations

#### 4.2.1 Noise Monitoring Results

##### Non-restricted Hours

Monitoring of the construction noise level was conducted during non-restricted hours in the reporting period at monitoring locations N1, N2, N3, N4, N5 and N6. All monitoring data and graphical presentation of the monitoring results are provided in **Appendix E** and are summarised in **Table 4.2**.

**Table 4.2** Summary of impact noise monitoring in the reporting period

Location	Noise Level, $L_{eq}(30min)$ , dB(A) (Range)			
	May 13	Jun 13	Jul 13	Mean
N1	72 (71 - 73)	72 (71 - 72)	72 (72 - 73)	72 (71 - 73)
N2	73 (72 - 73)	72 (72 - 73)	72 (72 - 73)	73 (72 - 73)
N3	67 (67 - 67)	66 (66 - 66)	67 (66 - 68)	67 (66 - 68)
N4	66 (66 - 67)	65 (65 - 66)	65 (65 - 66)	66 (65 - 67)
N5	70 (69 - 70)	69 (69 - 70)	69 (68 - 69)	69 (68 - 70)
N6	68 (67 - 68)	67 (67 - 68)	68 (67 - 68)	68 (67 - 68)

##### Restricted Hours

In the reporting period, the construction works and activities such as mobilization of materials and plants etc were carried out during restricted hours. The granted Construction

Noise Permits (CNPs) were issued by EPD for the related activities before the works commencement, the Contractor strictly followed the conditions stipulated in the CNPs. There was no non-compliance recorded during the reporting period.

#### **4.2.2 Exceedance of Limit and Action Levels for Construction Noise**

Totally 3 limit level exceedances (0 in May 13, 3 in Jun 13 and 0 in Jul 13) were recorded for noise measurement during non-restricted hours in the reporting period.

Based on the field observations, it was revealed that the exceedances were mainly caused by traffic vehicles along Tuen Mun Road. It was therefore concluded that the noise exceedances were not related to the construction activities. The details of the limit level exceedances had been presented in the corresponding monthly EM&A report (May 2013 to Jul 2013).

Two noise complaints, hence, two Action Level exceedances, were recorded in the reporting period.

Summary of above exceedance investigation of the Project is provided in the following **Section 6.2**.

#### **4.2.3 General Observations**

The construction site had been under normal operation during the noise monitoring period and no unusual operation was observed. Traffic noise had been noticed at the monitoring location during the noise monitoring period.

### **4.3 Landscape and Visual Monitoring Audit Results**

In the reporting period, landscape and visual site audit in accordance with the requirements stipulated in the EIA Report was conducted during the routine monthly site audit. The details of each LR, LCA and VSR are summarized in **Appendix F**. The implementation and maintenance of landscape and visual mitigation measures, listed in EIA Report, were checked during the site audit. During the reporting period, no substantial change of LR, LCA and VSR was noted, no non-compliance has been triggered, total 521 trees were felled and the pruning of the transplanted trees was carried out in accordance with the Specification for Tree Protection and Transplanting Works in Landscape Plan. The summary reports are presented in the corresponding monthly EM&A report (May 2013 to Jul 2013).

## **5 Waste Disposal**

The amounts of different types of waste generated by the activities of the Project in the reporting period are shown in **Table 5.1**. It is anticipated that the amount of different types of waste will be increased in the forth-coming month due to the increasing of the scale of construction works, attention should be paid and the mitigation measures recommended in the EIA Report should be implemented and maintained. No liquid waste was generated in the reporting period.

**Table 5.1** Amounts of waste generated in reporting period

Waste Type	Amount				Disposal Locations
	May 13	Jun 13	Jul 13	Total	
Inert C&D Materials	2,145.929 m <sup>3</sup>	469.082 m <sup>3</sup>	0 m <sup>3</sup>	2,615.01 m <sup>3</sup>	Broken concrete (Note 1)
	0 m <sup>3</sup>	0 m <sup>3</sup>	0 m <sup>3</sup>	0 m <sup>3</sup>	Reused in the Contract
	314.395 m <sup>3</sup>	0 m <sup>3</sup>	0 m <sup>3</sup>	314.4 m <sup>3</sup>	Reused in other Projects
	1,831.534 m <sup>3</sup>	469.082 m <sup>3</sup>	985.922 m <sup>3</sup>	3,286.54 m <sup>3</sup>	Disposal of at public fill at Tuen Mun Area 38
Chemical Waste	0 kg	0 kg	0 kg	0 kg	N/A
Paper / cardboard packaging	283 kg	0 kg	0 kg	283 kg	Recycler
Plastic	0 kg	0 kg	0 kg	0 kg	
Metal	0 kg	0 kg	0 kg	0 kg	
General Refuse	63.375 m <sup>3</sup>	39 m <sup>3</sup>	92.625 m <sup>3</sup>	195 m <sup>3</sup>	Disposal of at WENT landfill

**Notes:**

1. Broken concrete for recycling into aggregates.

## 6 Environmental Performance

### 6.1 Non-Compliance Record

There was no non-compliance received in the reporting period.

### 6.2 Review of Reasons of Non-Compliance

No Action and Limit Level exceedance was recorded for impact air quality monitoring in the reporting period.

Totally 3 limit level exceedances (0 in May 13, 3 in Jun 13 and 0 in Jul 13) of noise monitoring were recorded from the monitoring data at locations N1 during the reporting period, which triggered the Event and Action Plan for remedial action. Based on the on-site observations and interpretation from the results, it was revealed that the exceedances were mainly caused by traffic noise along Tuen Mun Road and was not related to the construction activities. No particular remedial work is required.

Two noise complaints, hence, two Action Level exceedances, were recorded in the reporting period. After the investigations, it is concluded that the complaints were attributable to the Contract. The corresponding mitigation measure due to the complaint was recommended to be carried out by the Contractor.

### 6.3 Notification of Summons and Successful Prosecution

No summons or prosecutions related to environmental issues were received or made against the Project in the reporting period.

### 6.4 Complaint Record

Two environmental complaints regarding noise issue were recorded during the reporting period.

The **first** environmental complaint was recorded in the reporting month.

The complaint was received by ICC on 29 Jun 13 related to noise nuisance of night works on Hong King Garden (Tsing Sin Street).



As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out in Hong King Garden (Tsing Sin Street). The noise nuisance was mainly caused by emergent maintenance and clearing work for concrete pumping truck.

The original grouting work was supposed to be completed by 19:00pm. Due to the incident of breaking of concrete pumping pipes, EPD has been notified for the emergency work to clear the work area. The Contractor has enhanced the maintenance system of all concrete pumping trucks. Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project. In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.

1. Idle equipments should be either turned off or throttled down; and
2. Improve the working practices to minimize the noise nuisance during the working activities as far as possible.

The complaint was received by ICC on 8 Jul 13 related to noise nuisance of night works under Yan Oi Footbridge.

As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out in Tuen Mun Road (under Yan Oi Footbridge). The noise nuisance was mainly caused by panel installation. On Friday midnight, 1 unit of aerial platform, 1 unit of crane lorry, 1 unit of drillers and 1 unit of welding machine have been deployed.

The relevant construction noise permit (CNP) no. GW-RW0341-13 was obtained for the corresponding work in the designated area prior to commencement. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior to the work commencement. No abnormal activities were observed during the complaint period. Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.

Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.

In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.

1. Well maintain the machines condition to minimize noise nuisance;
2. Relocate operating machinery as far as possible from nearby sensitive receivers;
3. Idle equipments should be either turned off or throttled down; and
4. Improve the working practices to minimize the noise nuisance during the working activities as far as possible.

The updated statistical summary of complaint is presented in **Table 6.1**. The updated complaint logs (C037 to C038) of the Project in the reporting period are shown in **Appendix G**.

**Table 6.1** Summary of complaints for the contract

Reporting Period	Complaint Statistics		Area of Concern	Validity to the Project	Status
	Number	Cumulative			
02/08/10 – 31/10/10	0	0	-	-	-
01/11/10 – 30/11/10	1	1	Noise	Yes (Ref.: C001)	Closed on 30 Nov 10.
01/12/10 – 31/01/11	0	1	-	-	-
01/02/11 – 28/02/11	1	2	Noise	Yes (Ref.: C002)	Closed on 2 Mar 11.

Reporting Period	Complaint Statistics		Area of Concern	Validity to the Project	Status
	Number	Cumulative			
01/03/11 – 31/03/11	0	2	-	-	-
01/04/11 – 30/04/11	2	4	Water	Yes (Ref.: C003)	Closed on 16 Apr 11.
			Noise	Yes (Ref.: C004)	Closed on 16 May 11.
01/05/11 – 31/05/11	1	5	Water	Yes (Ref.: C005)	Closed on 10 Jun 11.
01/06/11 – 30/06/11	1	6	Air	Yes (Ref.: C006)	Closed on 23 Jun 11.
	1	7	Noise	Yes (Ref.: C007)	Closed on 24 Jun 11.
	1	8	Water	Yes (Ref.: C008)	Closed on 4 Jul 11.
	1	9	Air	Yes (Ref.: C009)	Closed on 14 Jul 11.
01/07/11 – 31/07/11	1	10	Noise	Yes (Ref.: C010)	Closed on 4 Aug 11.
	1	11	Water	Yes (Ref.: C011)	Closed on 4 Aug 11.
01/08/11 – 31/08/11	0	11	-	-	-
01/09/11 – 30/09/11	1	12	Noise	Yes (Ref.: C012)	Closed on 29 Sep 11.
	1	13	Water	Yes (Ref.: C013)	Closed on 14 Oct 11.
	1	14	Water	Yes (Ref.: C014)	Closed on 14 Oct 11.
01/10/11 – 31/10/11	1	15	Water	Yes (Ref.: C015)	Closed on 28 Oct 11.
01/11/11 – 30/11/11	1	16	Noise	Yes (Ref.: C016)	Closed on 24 Nov 11.
	1	17	Noise	Yes (Ref.: C017)	Closed on 30 Nov 11.
01/12/11 – 31/12/11	0	17	-	-	-
01/01/12 – 31/01/12	1	18	Water	Yes (Ref.: C018)	Closed on 6 Feb 12.
	1	19	Water	Yes (Ref.: C019)	Closed on 6 Feb 12.
01/02/12 – 29/02/12	0	19	-	-	-
01/03/12 – 31/03/12	1	20	Water	Yes (Ref.: C020)	Closed on 22 Mar 12.
	1	21	Noise	Yes (Ref.: C021)	Closed on 28 Mar 12.
	1	22	Noise	Yes (Ref.: C022)	Closed on 5 Apr 12.
	1	23	Water	Yes (Ref.: C023)	Closed on 5 Apr 12.

Reporting Period	Complaint Statistics		Area of Concern	Validity to the Project	Status
	Number	Cumulative			
01/04/12 – 30/04/12	0	23	-	-	-
01/05/12 – 31/05/12	1	24	Water	Yes (Ref.: C024)	Closed on 24 May 12.
	1	25	Noise	Yes (Ref.: C025)	Closed on 7 Jun 12.
	1	26	Noise	Yes (Ref.: C026)	Closed on 7 Jun 12.
01/06/12 – 30/06/12	0	26	-	-	-
01/07/12 – 31/07/12	0	26	-	-	-
01/08/12 – 31/08/12	0	26	-	-	-
01/09/12 – 30/09/12	0	26	-	-	-
01/10/12 – 31/10/12	0	26	-	-	-
01/11/12 – 30/11/12	1	27	Noise	Yes (Ref.: C027)	Closed on 8 Nov 12.
	1	28	Noise	Yes (Ref.: C028)	Closed on 8 Nov 12.
01/12/12 – 31/12/12	1	29	Noise	Yes (Ref.: C029)	Closed on 31 Dec 12.
	1	30	Noise	Yes (Ref.: C030)	Closed on 31 Dec 12.
	1	31	Noise	Yes (Ref.: C031)	Closed on 31 Dec 12.
01/01/13 – 31/01/13	0	31	-	-	-
01/02/13 – 28/02/13	1	32	Noise	Yes (Ref.: C032)	Closed on 15 Feb 13.
	1	33	Noise	Yes (Ref.: C033)	Closed on 15 Feb 13.
	1	34	Noise	Yes (Ref.: C034)	Closed on 15 Feb 13.
	1	35	Noise	Yes (Ref.: C035)	Closed on 15 Feb 13.
01/03/13 – 31/03/13	0	35	-	-	-
01/04/13 – 30/04/13	1	36	Noise	Yes (Ref.: C036)	Closed on 9 May 13.
01/05/13 – 31/05/13	0	36	-	-	-
01/06/13 – 30/06/13	1	37	Noise	Yes (Ref.: C037)	Closed on 11 July 13.
01/07/13 – 31/07/13	1	38	Noise	Yes (Ref.: C038)	Closed on 25 July 13.

## 7 Conclusions and Recommendations

### 7.1 Conclusions

The construction phase of the Project was commenced on 2 August 2010. The EM&A programme has been implemented since then, including air quality, noise, landscape and visual and environmental site audits.

No Action and Limit Level exceedance was recorded for impact air quality monitoring in the reporting period.

No Action and Limit Level exceedance was recorded for impact air quality monitoring in the reporting period.

Totally 3 limit level exceedances (0 in May 13, 3 in Jun 13 and 0 in Jul 13) of noise monitoring were recorded from the monitoring data at locations N1 during the reporting period, which triggered the Event and Action Plan for remedial action. Based on the on-site observations and interpretation from the results, it was revealed that the exceedances were mainly caused by traffic noise along Tuen Mun Road and was not related to the construction activities. No particular remedial work is required.

Two noise complaints, hence, two Action Level exceedences, were recorded in the reporting period. After the investigations, it is concluded that the complaints were attributable to the Contract. The corresponding mitigation measure due to the complaint was recommended to be carried out by the Contractor.

No summons or prosecution related to environmental issues was received in the reporting period.

In accordance with the requirements stipulated in the EM&A manual, landscape and visual site audit was conducted regularly during the reporting period. Total 521 trees were felled and the pruning of the transplanted trees was carried out. No substantial change of LR, LCA and VSR was noted.

Weekly environmental site audit was carried out during the reporting period. The major environmental concerns were related to air quality, noise, water quality, waste management and tree maintenance.

### 7.2 Recommendations

Impact monitoring will be continued to carry out in the following month and followed by the requirement stipulated in the EM&A manual. Attention will be paid to environmental issues identified in EIA Report and weekly site audit. Mitigation measures recommended in EIA Report and Implementation Schedule of Mitigation Measure will be fully implemented.

Construction noise is one of the key environmental issues especially in restricted hours. The conditions stipulated in CNPs should be strictly followed when the construction works were carried out during the restricted hours.

Construction dust is another key environmental issue. The implemented construction dust mitigation measures including covering of exposed slope / soil with tarpaulin sheet etc., should be maintained and improved as necessary. Adequate water spraying should be provided for the unpaved area to minimize dust disturbance.

Water quality impact is also key environmental issue. The drainage system should be well maintained. The solid and liquid waste management should be strictly followed in accordance with the requirements described in the EIA report.

The retained trees should be protected and fenced properly. The Contractor was reminded to avoid trunks damage during construction works and, take the proper remedial measures immediately when damage was observed.

Moreover, the corresponding mitigation measures due to the complaints were recommended to carry out by the Contractor and are presented in Section 6.4. The Contractor was reminded to implement proper mitigation measure to minimize any environmental nuisance.

## 8 Reference

- [1] AECOM Asia Co. Ltd. December 2008. Agreement No. CE 22/2005 (HY) Supplementary No. 1 Traffic Improvements to Tuen Mun Road Town Centre Section – Environmental Monitoring & Audit Manual.
- [2] Ove Arup & Partners Hong Kong Limited. July 2010. Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section – Baseline Monitoring Report (Revision\_4)
- [3] Ove Arup & Partners Hong Kong Limited. Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section – Monthly Environmental Monitoring and Audit Report – May 2013 (Final)
- [4] Ove Arup & Partners Hong Kong Limited. Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section – Monthly Environmental Monitoring and Audit Report – June 2013 (Final)
- [5] Ove Arup & Partners Hong Kong Limited. Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section – Monthly Environmental Monitoring and Audit Report – July 2013 (Final)



Appendix A

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**Construction  
Programme**

**Design and Build of Traffic Improvement to Tuen Mun Road Town Centre Section**

Activity ID	Activity Name	Activity % Complete	Original Duration	Remaining Duration	Start	Finish	Late Start	Late Finish	Total Float	2013				
										May 40	Jun 41	Jul 42	Aug 43	
<b>Project General Submission</b>														
<b>General Submission</b>														
<b>Trail Green Panel</b>														
GS1580	Site trial for green wall panel	99.73%	365	1	05-Mar-11 A	20-May-13	15-May-13	16-May-13	-5					Site trial for green wall panel
GS1600	Site trial for green roof panel	99.73%	365	1	05-Mar-11 A	20-May-13	15-May-13	16-May-13	-5					Site trial for green roof panel
<b>Procurement</b>														
<b>Material Procurement and Fabrication</b>														
<b>Material Procurement and Fabrication</b>														
<b>Procurement and Fabrication</b>														
MP1120	Noise Barrier/Enclosure steel structure for Scheme C Area	64.88%	178	62	23-Dec-12 A	01-Aug-13	24-Dec-12	23-Oct-13	68					Noise Barrier/Enclosure steel structure for Scheme C Area
MP1130	Noise Barrier/Enclosure steel structure for Scheme D Area	100%	289	0	31-May-12 A	18-May-13 A								Noise Barrier/Enclosure steel structure for Scheme D Area
MP1140	Noise Barrier/Enclosure steel structure for Scheme E Area	71.89%	169	54	10-Jan-13 A	23-Jul-13	10-Jan-13	04-Jun-13	-40					Noise Barrier/Enclosure steel structure for Scheme E Area
MP1150	Noise Barrier/Enclosure wall panel for Scheme A Area	35.2%	207	134	31-Jan-13 A	29-Oct-13	31-Jan-13	23-Dec-13	48					Noise Barrier/Enclosure wall panel for Scheme A Area
MP1160	Noise Barrier/Enclosure wall panel for Scheme B Area	66.0%	140	43	28-Sep-12 A	10-Jul-13	28-Sep-12	23-Dec-13	139					Noise Barrier/Enclosure wall panel for Scheme B Area
MP1180	Noise Barrier/Enclosure wall panel for Scheme D Area	0%	112	112	10-Jun-13	24-Oct-13	08-Jul-13	18-Nov-13	22					Noise Barrier/Enclosure wall panel for Scheme D Area
MP1190	Noise Barrier/Enclosure wall panel for Scheme E Area	4.49%	145	138	10-May-13 A	02-Nov-13	11-Apr-13	03-Oct-13	-24					Noise Barrier/Enclosure wall panel for Scheme E Area
MP1210	Noise Barrier/Enclosure roof panel for Scheme B Area	32.07%	237	161	28-Sep-12 A	29-Nov-13	28-Sep-12	23-Dec-13	21					Noise Barrier/Enclosure roof panel for Scheme B Area
MP1220	Noise Barrier/Enclosure roof panel for Scheme C Area	20.84%	163	129	18-Apr-13 A	23-Oct-13	18-Apr-13	08-Dec-13	39					Noise Barrier/Enclosure roof panel for Scheme C Area
MP1230	Noise Barrier/Enclosure roof panel for Scheme D Area	11.45%	161	142	19-Apr-13 A	07-Nov-13	12-Mar-13	03-Oct-13	-28					Noise Barrier/Enclosure roof panel for Scheme D Area
MP1240	Noise Barrier/Enclosure roof panel for Scheme E Area	21.83%	236	184	13-Mar-13 A	28-Dec-13	22-Jan-13	08-Nov-13	-40					Noise Barrier/Enclosure roof panel for Scheme E Area
<b>Section I of Works</b>														
<b>Establishment Works in Portion 1</b>														
<b>Establishment Works in Portion 1</b>														
<b>Establishment Works</b>														
SEC11090	Establishment Works	55.34%	365	163	30-Sep-12 A	29-Oct-13	29-May-13	07-Nov-13	0					
<b>Section II of Works</b>														
<b>Scheme A (CH29405 - CH29050)</b>														
<b>Stage 1 Kowloon Bound Road Verge &amp; T1</b>														
<b>NB Structural Steel Post/Column Erection</b>														
RA1110	Erect NE01 S/B steel column	96%	25	1	22-Sep-12 A	20-May-13	11-Sep-13	12-Sep-13	90					Erect NE01 S/B steel column
<b>Stage 2 Both bound Road Verge near Yan Ching Bridge</b>														
<b>NB Structural Steel Post/Column Erection</b>														
RA1210	Erect NE05 NB & S/B steel columns	90.91%	44	4	25-Oct-12 A	23-May-13	26-Jul-13	31-Jul-13	57					Erect NE05 NB & S/B steel columns
<b>Stage 3 Central Median Area</b>														
<b>Concrete Column at Central Barrier</b>														
RA1390	Construct concrete column for NE02	81.82%	69	13	02-Dec-12 A	03-Jun-13	22-Aug-13	06-Sep-13	60					Construct concrete column for NE02
<b>NB Structural Steel Truss Erection</b>														
RA1750	Erect NE02 central truss	9.08%	19	17	21-Mar-13 A	24-Jun-13	06-Sep-13	27-Sep-13	80					Erect NE02 central truss
<b>Roadworks</b>														
RA1480	Roadworks central barrier CH29050 to CH29400	60%	58	23	04-Feb-13 A	06-Aug-13	11-Nov-13	07-Dec-13	103					Roadworks central barrier CH29050 to CH29400
<b>Stage 3-1 NE02 Kowloon Bound Verge (After remove Temp. Bridge)</b>														
<b>Pile Cap / Footing</b>														
RA1070	Construct pile cap NE02 PC1 to PC7	85.72%	58	8	21-Oct-11 A	28-May-13	22-Aug-13	31-Aug-13	79					Construct pile cap NE02 PC1 to PC7
<b>NB Structural Steel Post/Column Erection</b>														
RA1120	Erect NE02 S/B steel column	0%	22	22	28-May-13	24-Jun-13	31-Aug-13	27-Sep-13	79					Erect NE02 S/B steel column
<b>Stage 4 Steel Frame &amp; Panel</b>														
<b>Main Span Erection at YLB &amp; KLB of TMR</b>														
RA1497	Erection NE04 NB roof beam	94.67%	15	1	08-Mar-13 A	20-May-13	25-Jun-13	25-Jun-13	30					Erection NE04 NB roof beam
RA1498	Erection NE04 S/B roof beam	97.49%	15	0	08-Mar-13 A	21-May-13	31-Jul-13	31-Jul-13	60					Erection NE04 S/B roof beam
RA1500	Erection NE05 NB roof beam	99.53%	22	0	15-Jan-13 A	24-May-13	31-Jul-13	31-Jul-13	57					Erection NE05 NB roof beam
RA1502	Erection NE05 S/B roof beam	98.7%	22	0	15-Jan-13 A	24-May-13	31-Aug-13	31-Aug-13	83					Erection NE05 S/B roof beam
RA1780	Erection NE02 S/B roof beam	0%	22	22	24-Jun-13	20-Jul-13	27-Sep-13	25-Oct-13	79					Erection NE02 S/B roof beam
<b>Wall and Roof Panel Installation</b>														
RA1505	Install translucent roof panel NE03	75%	16	4	31-Jan-13 A	24-May-13	20-Jun-13	25-Jun-13	26					Install translucent roof panel NE03
RA1510	Install roof dadding & translucent roof panel NE05 NB & S/B	56.16%	63	28	13-Apr-13 A	01-Aug-13	31-Jul-13	31-Aug-13	26					Install roof dadding & translucent roof panel NE05 NB & S/B
RA1530	Install roof dadding & translucent roof panel NE01 S/B	19.05%	52	42	15-Apr-13 A	10-Jul-13	12-Sep-13	02-Nov-13	96					Install roof dadding & translucent roof panel NE01 S/B
RA1532	Install roof dadding & translucent roof panel NE02 S/B	0%	38	38	24-Jun-13	08-Aug-13	27-Sep-13	12-Nov-13	70					Install roof dadding & translucent roof panel NE02 S/B
RA1541	Planting for green roof NE05	0%	52	52	01-Aug-13	02-Oct-13	31-Aug-13	02-Nov-13	26					Planting for green roof NE05
RA1545	Install green and transparent wall panel NE03	48.96%	26	14	17-Apr-13 A	04-Jun-13	18-Jul-13	01-Aug-13	48					Install green and transparent wall panel NE03

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

**TMR-TCS 3MRP (20 May 2013)**

Date	Revision	Checked	Approved
20-Mar-13	WP04 (updated up to 20-03-13)	Renato	
20-Apr-13	WP04 (Updated up to 20-04-13)	Renato	
20-May-13	WP04 (Updated up to 20-5-13)	ZJ	

Design and Build of Traffic Improvement to Tuen Mun Road Town Centre Section

Activity ID	Activity Name	Activity % Complete	Original Duration	Remaining Duration	Start	Finish	Late Start	Late Finish	Total Float	2013				
										May	Jun	Jul	Aug	
RA1550	Install green and transparent wall panel NE04	0%	57	57	04-Jun-13	12-Aug-13	01-Aug-13	09-Oct-13	48					
RA1700	Install green and transparent wall panel NE05	88.75%	39	12	14-Apr-13 A	27-Aug-13	09-Oct-13	24-Oct-13	48				Install green and transparent wall panel NE05	
RA1800	Install green and transparent wall panel NE01	75%	21	5	15-Apr-13 A	02-Sep-13	25-Oct-13	31-Oct-13	48				Install green and transparent wall panel NE01	
<b>Stage 5 Road Re-surface</b>														
<b>Roadworks</b>														
RA1570	Existing road re-surfacing CH28050 to CH28400	70%	45	14	16-Mar-13 A	22-Aug-13	07-Dec-13	23-Dec-13	103				Existing road re-surfacing CH28050 to CH28400	
<b>Construction of New Yen Oi Bridge</b>														
<b>Column, Pier Head and Staircase</b>														
YO1187	Construct NB staircase	40%	45	27	16-Mar-13 A	20-Jun-13	22-Nov-13	23-Dec-13	155				Construct NB staircase	
<b>Scheme B (CH29050 - CH28520)</b>														
<b>Stage 1 Both Bound Road Verge</b>														
<b>Utilities Diversion</b>														
RB2124	Diversion existing PCCW 24 ways, HGC, 11kv & sewer	70%	55	17	06-Nov-12 A	07-Jun-13	07-May-13	27-May-13	-10				Diversion existing PCCW 24 ways, HGC, 11kv & sewer	
<b>Pile Cap / Footing</b>														
RB10875	Construct pad footing for NE06 FT4 to FT7	67.5%	67	22	26-Jan-13 A	05-Jul-13	28-May-13	22-Jun-13	-10				Construct pad footing for NE06 FT4 to FT7	
RB1240	Construct pad footing for NE07 FT1 & FT2	0%	33	33	05-Jul-13	13-Aug-13	22-Jun-13	01-Aug-13	-10				Construct pad footing for NE07 FT1 & FT2	
<b>NB Structural Steel Post/Column Erection</b>														
RB1335	Erect NE06 S/B steel column	14.3%	20	17	13-Jan-13 A	25-Jul-13	19-Aug-13	07-Sep-13	38				Erect NE06 S/B steel column	
RB1340	Erect NE07 S/B steel column	0%	1	1	13-Aug-13	14-Aug-13	06-Sep-13	07-Sep-13	21				Erect NE07 S/B steel column	
RB1870	Erect NE06 NB steel column	95.23%	20	1	16-Sep-12 A	20-May-13	06-Jul-13	06-Jul-13	39				Erect NE06 NB steel column	
<b>Drainage Works</b>														
RB1380	Construct drainage NB verge CH28600 to CH28950 (L=350m.)	80%	117	23	31-Aug-12 A	17-Jun-13	13-Jul-13	10-Aug-13	48				Construct drainage NB verge CH28600 to CH28950 (L=350m.)	
<b>Roadworks</b>														
RB1400	Roadworks NB verge CH28600 to CH28950 (L=350m.)	30%	88	81	11-Mar-13 A	01-Aug-13	13-Jul-13	24-Sep-13	48				Roadworks NB verge CH28600 to CH28950 (L=350m.)	
<b>Stage 2 Central Median</b>														
<b>Roadworks</b>														
RB1650	Roadworks central barrier CH28500 to CH29000 (L=500m.)	80%	83	17	31-Aug-12 A	07-Jun-13	04-Sep-13	24-Sep-13	90				Roadworks central barrier CH28500 to CH29000 (L=500m.)	
<b>Stage 3 Steel Frame &amp; Panels</b>														
<b>Main Span Erection at Y/B &amp; K/L/B of TMR</b>														
RB1665	Erection NE06 & 07 NB roof beam	90.6%	24	0	05-Jan-13 A	21-May-13	06-Jul-13	08-Jul-13	39				Erection NE06 & 07 NB roof beam	
RB1670	Erection NE06 & 07 S/B roof beam	38.11%	24	15	03-Jan-13 A	31-Aug-13	07-Sep-13	28-Sep-13	21				Erection NE06 & 07 S/B roof beam	
RB1676	Erection NE12 to 14 S/B roof beam	98.25%	20	0	12-Dec-12 A	20-May-13	05-Nov-13	05-Nov-13	140				Erection NE12 to 14 S/B roof beam	
RB2160	Erection NE12 to 14 NB roof beam	98.75%	20	0	14-Dec-12 A	21-May-13	05-Nov-13	05-Nov-13	139				Erection NE12 to 14 NB roof beam	
<b>Wall and Roof Panel Installation</b>														
RB1690	Install roof cladding & translucent roof panel NE06 & 07 NB & S/B	0%	88	88	11-Jun-13	31-Aug-13	06-Jul-13	28-Sep-13	21				Install roof cladding & translucent roof panel NE06 & 07 NB & S/B	
RB1694	Install translucent roof panel NE10 to 14 S/B	50%	87	33	18-Dec-12 A	28-Jun-13	14-Nov-13	23-Dec-13	149				Install translucent roof panel NE10 to 14 S/B	
RB1702	Install roof cladding & translucent roof panel NE10 to 14 NB	94.99%	74	4	19-Dec-12 A	24-May-13	18-Dec-13	19-Dec-13	174				Install roof cladding & translucent roof panel NE10 to 14 NB	
RB1714	Planting for green roof NE11	85%	21	3	15-Mar-13 A	28-May-13	19-Dec-13	23-Dec-13	174				Planting for green roof NE11	
RB2170	Install green and transparent wall panel NE08	84.96%	10	4	28-Oct-12 A	23-May-13	19-Dec-13	23-Dec-13	174				Install green and transparent wall panel NE08	
RB2180	Install green and transparent wall panel NE10 to 14	88.87%	132	41	16-Nov-12 A	10-Jul-13	05-Nov-13	23-Dec-13	139				Install green and transparent wall panel NE10 to 14	
<b>Scheme C (CH28520 - CH28200)</b>														
<b>Stage 1 NE15 East Side, Tsing Hoi Circuit Re-alignment &amp; S/B Foundation</b>														
<b>Foundation Works</b>														
RC1735	Water diversion along Tsing Hoi Circuit (by others)	01.84%	49	4	12-Apr-12 A	23-May-13	29-May-13	01-Jun-13	7				Water diversion along Tsing Hoi Circuit (by others)	
<b>NB Structural Steel Post/Column Erection</b>														
RC1120	Erection part of NE16 S/B steel column (PC10, FT11 to FT15)	94.44%	18	1	23-Dec-12 A	20-May-13	05-Jul-13	06-Jul-13	39				Erection part of NE16 S/B steel column (PC10, FT11 to FT15)	
RC1130	Erection part of NE16 NB steel column (FT17 to FT34 & PC35)	40%	25	15	30-Dec-12 A	06-Jun-13	06-Jul-13	24-Jul-13	39				Erection part of NE16 NB steel column (FT17 to FT34 & PC35)	
RC1550	Erection part of NE16 S/B steel column (FT1 to FT7 & PC8 to PC9)	84%	25	4	23-Dec-12 A	23-May-13	24-Jun-13	27-Jun-13	29				Erection part of NE16 S/B steel column (FT1 to FT7 & PC8 to PC9)	
<b>Roadworks</b>														
RC1150	Roadworks T5 alignment	80.15%	60	12	04-Mar-13 A	01-Jun-13	10-Sep-13	24-Sep-13	65				Roadworks T5 alignment	
RC1175	Roadworks NB verge CH28400 to CH28500	0%	50	50	27-Jun-13	24-Aug-13	27-Jul-13	24-Sep-13	25				Roadworks NB verge CH28400 to CH28500	
<b>Stage 3 Central Median &amp; NB Foundation</b>														
<b>Pile Cap / Footing</b>														
RC1370	Construct pad footing NE16 FT37 to FT41 & NE17 FT15 to FT20	63.83%	92	33	10-Dec-12 A	28-Jun-13	08-May-13	15-Jun-13	-10				Construct pad footing NE16 FT37 to FT41 & NE17 FT15 to FT20	
RC1845	Construct pad footing NE16 FT23 to FT26 & NE17 FT9 to FT14	90%	167	17	30-Oct-12 A	07-Jun-13	08-May-13	29-May-13	-8				Construct pad footing NE16 FT23 to FT26 & NE17 FT9 to FT14	
<b>Concrete Column at Central Barrier</b>														
RC1415	Construct concrete column for NE17	63%	69	25	30-Mar-13 A	10-Jul-13	29-May-13	28-Jun-13	-6				Construct concrete column for NE17	
<b>NB Structural Steel Post/Column Erection</b>														
RC1690	Erection NE16 NB steel column	44.44%	18	10	30-Dec-12 A	11-Jul-13	17-Jun-13	27-Jun-13	-10				Erection NE16 NB steel column	
RC1710	Erection NE17 NB steel column	0%	23	23	11-Jul-13	07-Aug-13	28-Jun-13	25-Jul-13	-10				Erection NE17 NB steel column	
<b>NB Structural Steel Truss Erection</b>														
RC1440	Erect NE16 central truss	94.9%	29	1	03-Feb-13 A	21-May-13	27-Jun-13	28-Jun-13	33				Erect NE16 central truss	

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

TMR-TCS 3MRP (20 May 2013)

Date	Revision	Checked	Approved
20-Mar-13	WP04 (updated up to 20-03-13)	Renato	Approved
20-Apr-13	WP04 (Updated up to 20-04-13)	Renato	
20-May-13	WP04 (Updated up to 20-5-13)	ZJ	

**Design and Build of Traffic Improvement to Tuen Mun Road Town Centre Section**

Activity ID	Activity Name	Activity % Complete	Original Duration	Remaining Duration	Start	Finish	Late Start	Late Finish	Total Float	2013				
										May	Jun	Jul	Aug	
RC1855	Erect NE17 central truss	0%	22	22	10-Jul-13	05-Aug-13	20-Jun-13	25-Jul-13	-9					
<b>Drainage Works</b>														
RC1870	Construct drainage N/B verge CH28250 to CH28400	50%	100	50	27-Dec-12A	27-Aug-13	27-Jun-13	24-Aug-13	-1					
<b>Roadworks</b>														
RC1890	Roadworks N/B verge CH28250 to CH28400	0%	75	75	28-Jun-13	28-Sep-13	27-Jun-13	24-Sep-13	-1					
RC1885	Roadworks central barrier CH28150 to CH28500	55%	117	58	07-Jan-13A	18-Aug-13	17-Jul-13	24-Sep-13	52					
<b>Stage 4 Steel Frame &amp; Panel</b>														
<b>NB Structural Steel Post/Column Erection</b>														
RC1447	Erection NE18 roof beam (Tuen Hing Rd to Su On Bridge) NB & SB	50.66%	50	25	03-Feb-13A	08-Jul-13	24-Jul-13	22-Aug-13	38					
RC1449	Erection NE16 roof beam (Su On Bridge to NE17) NB & SB	48.61%	38	19	01-Mar-13A	01-Aug-13	30-Sep-13	23-Oct-13	68					
RC1450	Erection NE17 roof beam NB & SB	0%	48	48	07-Aug-13	02-Oct-13	28-Jul-13	17-Sep-13	-10					
<b>Wall and Roof Panel Installation</b>														
RC1465	Install roof translucent roof panel NE15	20%	21	18	16-Apr-13A	07-Jun-13	04-Dec-13	23-Dec-13	166					
RC1466	Install roof translucent roof panel NE16 (Tuen Hing Rd to Su On Bridge) NB & SB	37.84%	90	56	03-Apr-13A	14-Aug-13	24-Jul-13	30-Sep-13	39					
RC1470	Install roof cladding & translucent roof panel NE16 (Su On Bridge to NE17) NB & SB	0%	57	57	14-Aug-13	23-Oct-13	30-Sep-13	08-Dec-13	39					
RC1480	Install translucent roof panel NE17 NB & SB	0%	41	41	13-Aug-13	02-Oct-13	08-Nov-13	23-Dec-13	70					
RC1484	Green roof planing for NE16	0%	112	112	28-Jun-13	08-Nov-13	12-Aug-13	23-Dec-13	39					
RC1495	Install green and transparent wall panel NE15	82.84%	42	16	17-Apr-13A	26-Jun-13	05-Dec-13	23-Dec-13	150					
RC1865	Install green and transparent wall panel NE16	0%	109	109	07-Jun-13	17-Oct-13	15-Aug-13	23-Dec-13	58					
<b>Construction of New Su On Bridge</b>														
<b>Lift Installation</b>														
SO1130	Lift installation	95%	45	2	01-Sep-12A	22-May-13	20-Dec-13	23-Dec-13	180					
<b>E&amp;M and Finishing Works</b>														
SO1110	Finishing works	95%	90	5	16-Oct-12A	24-May-13	18-Dec-13	23-Dec-13	178					
SO1120	E&M installation	95%	90	5	10-Dec-12A	24-May-13	18-Dec-13	23-Dec-13	178					
<b>TCSS and Fire Fighting System</b>														
<b>TCSS and Fire Fighting System</b>														
<b>TCSS and Fire Fighting System</b>														
TCSS10X	Section 2 TCSS installation	72.33%	692	162	11-Mar-11A	07-Jan-14	11-Mar-11	23-Dec-13	-10					
TCSS10I	Section 2 Street lighting & Fire Fighting system installation	72.33%	692	162	11-Mar-11A	07-Jan-14	11-Mar-11	23-Dec-13	-10					
<b>Section III of Works</b>														
<b>Scheme D (CH28200 - CH27785)</b>														
<b>Stage 1 N/B Foundation</b>														
<b>Pile Cap / Footing</b>														
RD1710	Construct pile cap and wall NE26 PC1 to PC10	40%	77	48	08-Mar-12A	22-Jul-13	20-Apr-13	17-Jun-13	-28					
<b>NB Structural Steel Post/Column Erection</b>														
RD1380	Erect NE26 SB steel column	23%	20	22	26-Mar-13A	18-Aug-13	17-Jun-13	15-Jul-13	-28					
<b>Stage 3 Central Median Foundation</b>														
<b>Pile Cap / Footing</b>														
RD1450	Construct pad footing NE18 FT10 to FT15	83%	100	17	28-Jan-13A	07-Jun-13	12-Apr-13	03-May-13	-20					
<b>Concrete Column at Central Barrier</b>														
RD1500	Construct concrete column for NE18	54%	69	32	30-Mar-13A	17-Jul-13	03-May-13	11-Jun-13	-20					
<b>NB Structural Steel Truss Erection</b>														
RD1140	Erect NE18 central truss	0%	18	18	17-Jul-13	07-Aug-13	11-Jun-13	04-Jul-13	-20					
<b>Roadworks</b>														
RD1860	Roadworks along central median CH27800 to CH28250	50%	113	58	22-Aug-12A	01-Aug-13	10-Jul-13	24-Sep-13	45					
<b>Stage 4 NE18, NE21 &amp; NE23 Foundation</b>														
<b>Pile Cap / Footing</b>														
RD3040	Construct pad footing NE18 FT1 to FT9	89%	133	15	03-Dec-12A	10-Jun-13	01-Jun-13	10-Jun-13	7					
RD3070	Construct pad footing NE23 FT1 to FT12	92.25%	200	16	18-Jun-12A	14-Jun-13	02-Aug-13	20-Aug-13	58					
<b>NB Structural Steel Post/Column Erection</b>														
RD3000	Erect NE23 steel column	0%	38	38	14-Jun-13	27-Jul-13	20-Aug-13	03-Oct-13	58					
RD3010	Erect NE21 steel column	0%	13	13	18-Aug-13	31-Aug-13	03-Oct-13	19-Oct-13	39					
RD3020	Erect NE18 SB steel column	84%	21	8	12-Apr-13A	20-Jun-13	19-Jun-13	28-Jun-13	7					
RD3030	Erect NE18 NB steel column	80.95%	21	4	23-Mar-13A	25-Jun-13	28-Jun-13	04-Jul-13	7					
<b>Stage 5 NE20 &amp; NE22 Foundation</b>														
<b>NB Structural Steel Post/Column Erection</b>														
RD1832	Erect NE20 NB steel column	92.86%	24	2	07-Feb-13A	28-Jun-13	05-Sep-13	07-Sep-13	61					
<b>Stage 6 Steel Frame &amp; Panel</b>														
<b>NB Structural Steel Post/Column Erection</b>														
RD1580	Erection NE18 N/B & S/B roof beam	0%	42	42	07-Aug-13	28-Sep-13	04-Jul-13	22-Aug-13	-20					

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Design and Build of Traffic Improvement to Tuen Mun Road Town Centre Section

Activity ID	Activity Name	Activity % Complete	Original Duration	Remaining Duration	Start	Finish	Late Start	Late Finish	Total Float	2013				
										May	Jun	Jul	Aug	
RD1585	Erection NE20 roof beam	100%	24	0	06-Apr-13A	03-May-13A	07-Sep-13	07-Sep-13						
RD1590	Erection NE28 roof beam	0%	29	20	16-Aug-13	19-Sep-13	15-Jul-13	17-Aug-13	-28					
<b>Wall and Roof Panel Installation</b>														
RD1800	Install roof dadding & translucent roof panel NE18 NB & SB	0%	89	69	07-Aug-13	30-Oct-13	04-Jul-13	24-Sep-13	-20					
RD1805	Install roof dadding & translucent roof panel NE22	0%	20	3	16-Nov-12A	28-Jun-13	20-Dec-13	23-Dec-13	147					
RD1810	Install roof dadding & translucent roof panel NE28	0%	98	98	16-Aug-13	12-Dec-13	15-Jul-13	08-Nov-13	-28					
RD3090	Install green and transparent wall panel NE22	52.22%	24	11	16-Nov-12A	11-Jul-13	10-Dec-13	23-Dec-13	139					
RD3110	Install absorptive & transparent wall panel NE23	0%	30	30	27-Jul-13	31-Aug-13	03-Oct-13	08-Nov-13	58					
<b>Stage 7 Road Re-surface</b>														
<b>Roadworks</b>														
RD1640	Existing road re-surfacing CH27800 to CH28200 (L=400m.)	0%	75	75	02-Aug-13	31-Oct-13	25-Sep-13	23-Dec-13	45					
<b>Construction of Vehicular Bridge S1</b>														
<b>Pile Cap</b>														
S1B4100	Construct South Abutment	90%	80	6	03-Oct-12A	25-May-13	28-Mar-13	02-Apr-13	-40					
<b>Bridge S1 Deck Construction</b>														
S1B1444	Deck Construction Pier 7 to South Abutment	100%	45	0	04-Feb-13A	20-May-13A	20-Apr-13	20-Apr-13						
S1B1450	Falseworks for Bridge Deck Pier 3 to North Abutment	80%	30	6	15-Apr-13A	08-Jun-13	18-Apr-13	25-Apr-13	-37					
S1B1460	Deck Construction Pier 3 to North Abutment	10%	45	41	02-May-13A	29-Jul-13	25-Apr-13	14-Jun-13	-37					
<b>Parapet Type A &amp; B Installation</b>														
S1B1070	Construct parapet Pier 7 to Pier 3	30%	60	42	14-Mar-13A	09-Jul-13	24-Jun-13	13-Aug-13	30					
S1B1075	Construct parapet Pier 7 to South Abutment	0%	50	50	27-May-13	25-Jul-13	14-Jun-13	13-Aug-13	18					
S1B1460	Construct parapet Pier 3 to North Abutment	0%	50	50	29-Jul-13	28-Sep-13	14-Jun-13	13-Aug-13	-37					
<b>Vehicular Bridge S1 NB Steel Column</b>														
S1B1110	Erect NE19 steel column	0%	50	50	22-Aug-13	22-Oct-13	10-Jul-13	05-Sep-13	-37					
<b>Modification of Existing Wong Chu Road Flyover</b>														
S1B1090	Modification of existing Wong Chu Road flyover	50%	120	60	18-Mar-13A	30-Jul-13	11-May-13	23-Jul-13	-8					
S1B1100	Stitching of existing Wong Chu Road flyover and S1 bridge	0%	90	90	31-Jul-13	15-Nov-13	24-Jul-13	08-Nov-13	-8					
<b>Scheme E (CH27785 - CH27000)</b>														
<b>Stage 3 NE27 S/B Foundation</b>														
<b>NB Structural Steel Post/Column Erection</b>														
RE1000	Erect NE27 S/B steel column	100%	45	0	04-May-13A	19-May-13A	28-Mar-13	28-Mar-13						
<b>Drainage Works</b>														
RE1070	Construct drainage S/B verge CH27550 to CH27750	95%	67	3	09-Mar-13A	23-May-13	28-Mar-13	29-Mar-13	-40					
<b>Roadworks</b>														
RE1202	Roadworks S/B verge CH27550 to CH27750	23%	50	39	15-Apr-13A	05-Jul-13	28-Mar-13	18-May-13	-40					
<b>Stage 4 Steel Frame &amp; Panel</b>														
<b>Temporary Traffic Arrangement</b>														
RE1020	Submit and approve TTA for RE Stage 3	100%	120	0	04-Feb-13A	19-May-13A	18-May-13	18-May-13						
<b>NB Structural Steel Post/Column Erection</b>														
RE1130	Erection NE27 S/B roof beam	0%	45	45	05-Jul-13	27-Aug-13	18-May-13	11-Jul-13	-40					
<b>Wall and Roof Panel Installation</b>														
RE1140	Install transparent roof panel NE27	0%	148	148	05-Jul-13	28-Dec-13	18-May-13	08-Nov-13	-40					
<b>TCSS and Fire Fighting System</b>														
<b>TCSS and Fire Fighting System</b>														
TCSS101	Section 3 TCSS installation	78.72%	644	137	13-Jan-11 A	31-Oct-13	13-Jan-11	23-Dec-13	45					
TCSS102	Section 3 Street lighting & Fire Fighting system installation	78.72%	644	137	13-Jan-11 A	31-Oct-13	13-Jan-11	23-Dec-13	45					
<b>Section III G of Works</b>														
<b>Landscaping Works in Portion 4</b>														
<b>Landscaping Works</b>														
3G1010	Compensatory planting works at Location No.2 (3 nos.)	0%	12	12	05-Jun-13	20-Jun-13	13-Jun-13	28-Jun-13	6					
3G1040	Compensatory planting works at Location No.6 (2 nos. tree pot)	0%	12	12	13-Jun-13	28-Jun-13	21-Jun-13	08-Jul-13	6					
3G1050	Compensatory planting works at Location No.8 (2 nos. tree pot)	0%	12	12	21-Jun-13	08-Jul-13	01-Jul-13	18-Jul-13	6					
3G1060	Compensatory planting works at Location No.8 (2 nos. tree pot)	0%	12	12	01-Jul-13	15-Jul-13	09-Jul-13	24-Jul-13	6					
3G1070	Compensatory planting works at Location No.10 (9 nos.)	0%	18	18	09-Jul-13	01-Aug-13	17-Jul-13	09-Aug-13	6					
3G1140	Compensatory planting works at Location No.17 (3 nos.)	0%	12	12	25-Jul-13	09-Aug-13	02-Aug-13	10-Aug-13	6					
3G1160	Compensatory planting works at Location No.18A (9 nos.)	0%	18	18	02-Aug-13	27-Aug-13	12-Aug-13	04-Sep-13	6					
3G1220	Compensatory planting works at Location No.22 (10 nos.)	0%	18	18	20-Aug-13	12-Sep-13	28-Aug-13	20-Sep-13	6					
<b>Establishment Works</b>														

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**Design and Build of Traffic Improvement to Tuen Mun Road Town Centre Section**

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										May	Jun	Jul	Aug
3G1380	Establishment Work(Nos.1A,2,4-6,8-10,12,13,13A-B,14-18,18A-C,20,20A, 21,22,24)	98.63%	365		5/25-Feb-12 A	24-May-13	20-Feb-13	24-Feb-13	-69	40	41	42	43
<b>Section IV of Works</b>													
<b>Preservation and Protection of Trees</b>													
<b>Preservation and Protection of Existing Trees</b>													
<b>Preservation and Protection of Existing Trees</b>													
S4-1000	Preservation and protection of trees	79.23%	982	204	26-Feb-10 A	21-Jan-14	22-Apr-13	23-Dec-13	-22				
<b>Schedule of Milestones</b>													
<b>Schedule of Milestones</b>													
<b>Schedule of Milestones</b>													
<b>Establishment Works in Portion 1</b>													
CC06001	6.1.1 to 12 month of Establishment Work period of Section 1B	52.88%	385	172	29-Sep-12 A	07-Nov-13	29-Sep-12	07-Nov-13	0				
<b>Earthworks, Drainage Works, Roadworks and Landscape Hardworks on Portion 2</b>													
CC08001	8.1.1 to 5 base course plan area of the roadworks in Portion 2	82.8%	634	110	02-Jul-11 A	07-Sep-13	03-Jul-11	05-Sep-13	-1				
CC08001	8.2.1 to 5 wearing course of the total plan area of the roadworks in Portion 2	78.82%	705	149	26-May-11 A	16-Oct-13	27-May-11	14-Oct-13	-1				
CC08002	8.3.1 to 5 length of sewer and drain pipes in Portion 2	83.21%	657	110	07-Jun-11 A	07-Sep-13	05-Jun-11	05-Sep-13	-1				
CC08002	8.4.1 to 5 number of Manholes, Gullies, Catchpits, Other Chambers and Drawpits in Portion 2	83.21%	657	110	07-Jun-11 A	07-Sep-13	05-Jun-11	05-Sep-13	-1				
CC08003	8.5.1 to 5 number of Traffic Signs in Portion 2	73.92%	707	184	06-Aug-11 A	20-Nov-13	07-Aug-11	18-Nov-13	-1				
CC08003	8.6.1 to 5 number of Sign Gantries in Portion 2	73.92%	707	184	06-Aug-11 A	20-Nov-13	07-Aug-11	18-Nov-13	-1				
CC08004	8.8.1 to 5 length of road kerbs in Portion 2	77.68%	669	149	02-Jul-11 A	16-Oct-13	03-Jul-11	14-Oct-13	-1				
CC08004	8.9.1 to 5 area of footpaths in Portion 2	77.68%	669	149	02-Jul-11 A	16-Oct-13	03-Jul-11	14-Oct-13	-1				
<b>Noise Barrier and Noise Enclosure in Portion 2</b>													
CC09003	9.4.1 to 10 reinforcement of the pile cap	98.06%	477	19	28-Sep-11 A	07-Jun-13	28-Sep-11	29-May-13	-9				
CC09004	9.5.1 to 10 concreting the pile cap	98.06%	477	19	28-Sep-11 A	07-Jun-13	28-Sep-11	29-May-13	-9				
<b>Reprovision of Yan Oi Bridge</b>													
CC12003	12.8.1 to 2 the deck, the staircases and the roof of the Yan Oi Bridge	80.34%	163	32	28-Jun-12 A	20-Jun-13	28-Jun-12	23-Dec-13	188				
CC12004	12.9-On completion of associated finishes, bridge furniture, lightings, parapets, railing	0%	0	0		21-Jun-13		23-Dec-14	551				
CC12004	12.10-On completion of the Works of Yan Oi Bridge to the satisfaction of the Supervi	0%	0	0		21-Jun-13		23-Dec-14	551				
<b>Earthworks, Drainage Works, Roadworks and Landscape Hardworks in Portion 3A</b>													
CC23001	23.1.1 to 5 base course of the total plan area of the roadworks in Portion 3A	85.07%	382	57	18-May-12 A	15-Jul-13	19-May-12	05-Sep-13	52				
CC23001	23.2.1 to 5 wearing course of the total plan area of the roadworks in Portion 3A	68.84%	277	92	25-Jun-12 A	19-Aug-13	26-Jun-12	14-Oct-13	56				
CC23002	23.5.1 to 5 total number of Traffic Signs in Portion 3A	58.53%	309	128	04-Sep-12 A	24-Sep-13	05-Sep-12	18-Nov-13	55				
CC23003	23.8.1 to 5 total number of Sign Gantries in Portion 3A	58.53%	309	128	04-Sep-12 A	24-Sep-13	05-Sep-12	18-Nov-13	55				
CC23004	23.8.1 to 5 total length of road kerbs in Portion 3	85.07%	382	57	18-May-12 A	15-Jul-13	19-May-12	05-Sep-13	52				
CC23004	23.9.1 to 5 total area of footpaths in Portion 3A	85.07%	382	57	18-May-12 A	15-Jul-13	19-May-12	05-Sep-13	52				
<b>Noise Barrier and Noise Enclosure in Portion 3A</b>													
CC24005	24.8.1 to 10 of the length of noise barriers in Portion 3A	40.95%	207	122	20-Sep-12 A	19-Sep-13	17-Aug-13	17-Aug-13	-33				
CC24007	24.8.1 to 20 panel and roof area (including absorptive, reflective, green wall and fire	0%	160	160	05-Jul-13	12-Dec-13	18-May-13	08-Nov-13	-33				
<b>Widening of Wong Chu Road and Vehicular Bridge S1</b>													
CC27003	27.8.1 to 5 Concreting of the bridge deck plan area of Widening of Wong Chu Road	100%	184	0	20-Aug-12 A	20-May-13 A							
<b>Landscape Softworks in Portion 3A</b>													
CC29001	29.2.1 to 10 Landscape Softworks in Portion 3A	0%	90	90	11-Aug-13	08-Nov-13	11-Aug-13	08-Nov-13	0				

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Appendix B

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**Environmental  
Mitigation Measures**

## Environmental Mitigation Measures

The environmental mitigation measures carried out were basically followed the requirements described in the EIA Report. Major mitigation measures during the construction phase in relation to the air quality, noise, water quality, ecology, waste management as well as landscape and visual are summarised as follows:

### Air Quality (Dust) related

- Skip hoist for material transport should be totally enclosed by impervious sheeting;
- Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site;
- The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;
- Where a site boundary adjoins a road, streets or other accessible to the public, hording of not less than 2.4m high from ground level should be provided along the entire length except for a site entrance or exit;
- Every stack of more than 20 bags of cement should be covered entirely by impervious sheeting places in an area sheltered on the top and the 3 sides;
- All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet;
- The height from which excavated materials are dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading;
- The load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle; and
- Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.

### Construction Noise related

Mitigation measures are implemented in three levels, namely Level 1, which involves adoption of quiet PME; Level 2, which involves provision of movable noise barrier; and Level 3, which involves scheduling of construction activities.

#### Level 1 – Adoption of Quiet PME

- Quieter PME to be used in the assessment are given in **Table A**.

**Table A** Listing of Quiet PME items

Powered Mechanical Equipment (PME)	Identification Code / BS5228	Maximum SWL, dB(A)
Excavator	C8/33	102
Crane	C7/114	101
Truck	C3/59	105
Concrete Truck	C6/35	100
Poker Vibrator	CNP 173	102
Asphalt Paver	C8/24	101
Roller, vibratory	C3/115	102

**Level 2 – Use of Movable Noise Barrier**

- Use of movable noise barrier (3m high or above) is proposed to be provided for the PMEs operated in the vicinity of the NSRs given in **Table B** during the construction phase.

**Table B** NSRs – with movable noise barrier

NSR	Description
FEC	Far East Consortium Tuen Mun Central Building
FM	Forward Mansion
HTB	Hing Tai Building
TMTP1	Tuen Mun Town Plaza
WG2	Waldorf Garden
CMA*	CMA Choi Cheung Kok Secondary School
LWF*	Yan Oi Tong Madam Lau Wong Fat Primary School
TMF	Tuen Mun Fa Yuen
LCK*	Lui Cheung Kwong Lutheran College
CLFY1	Chi Lok Fa Yuen
TFH	On Ting Estate ( Ting Fuk House)
LCKP*	Lui Cheung Kwong Lutheran Primary School
TTP	Tung Wah Group of Hospitals Tai Tung Pui Social Service Building
CSBS*	CSBS Mrs. Aw Boon Haw Secondary School
KFG3D	Kam Fai Garden

Remark: NSR with asterisk means educational institution.

**Level 3 – Scheduling of Construction Activities**

- It is proposed that site clearance and the following activities not to be undertaken in the vicinity of the NSR LCK at stage 2 (Ch. 28050 – 28200 of TMR) so as to reduce construction noise impact during normal teaching hours.
  - Truck would not operate concurrently with other PMEs during tree transplanting and noise barrier foundation work.
  - Tree Transplanting would not be undertaken concurrently with Bulk Excavation and Utilities Diversion.
  - Construction of Storm Water Drain would not be undertaken concurrently with Noise Barrier/Enclosure Foundation.
  - Construction of Sub-base and Road Base would not be undertaken concurrently with Noise Barrier/Enclosure Installation.
  - Road Surfacing, Construction of Road kerbs, Central Dividers, Parapets, and Installation of Crash Cushion and Sign Gantry would not be undertaken concurrently.
  - Installation of Gantry and Directional Lighting, and Street Lighting would not be undertaken concurrently.
- In order to avoid or reduce the construction noise problems at the schools during examination, the Contractor of the Project is suggested to liaison with all the relevant schools (CMA, LWF, LCK, LCKP and CSBS) to check out their examination periods and

activities at the beginning of the work programme. Thus, the Contractor can make good planning and arrangement of works and provide sufficient mitigation plans to alleviate the noise impacts.

- Good Site Practice:
  - Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program.
  - Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum.
  - Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.
  - Mobile plant should be sited as far away from NSRs as possible.
  - Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.

### **Water Quality related**

#### **Construction Runoff and Drainage**

The site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" should be followed as far as practicable in order to minimise surface runoff and the chance of erosion, and also to retain and reduce any suspended solids prior to discharge. These practices include the following items:

- Before commencing any site formation work, all sewer and drainage connections should be sealed to prevent debris, soil, sand etc. from entering public sewers/drains.
- Silt removal facilities such as silt traps or sedimentation facilities should be provided to remove silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of silt removal facilities should be based on the guidelines provided in ProPECC PN 1/94. All drainage facilities and erosion and sediment control structures should be inspected monthly and maintained to ensure proper and efficient operation at all times and particularly during rainstorms.
- Careful programming of the works to minimise surface excavations for the road improvement works during the wet season. If excavation of soil cannot be avoided during the wet season, exposed slope surfaces should be covered by a tarpaulin or other means. Other measures that need to be implemented before, during, and after rainstorms are summarized in ProPECC PN 1/94.
- Exposed soil surfaces should be protected by paving or fill material as soon as possible to reduce the potential of soil erosion.
- Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. These materials should not be placed near water courses.

#### **General Construction Activities**

Debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering the nearby local stormwater drainage system. Stockpiles of cement and other construction materials should be kept covered when not being used.

- Oils and fuels should only be used and stored in designated areas which have pollution prevention facilities. All fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event.



### **Sewage Effluents**

Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site. A licensed contractor would be responsible for appropriate disposal and maintenance of these facilities.

### **Waste Management related**

#### **Good Site Practices**

Adverse impacts related to waste management are not expected to arise, provided that good site practices are adhered to. Recommendations for good site practices during the construction activities include:

- Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site;
- Training of site personnel in proper waste management and chemical handling procedures;
- Provision of sufficient waste disposal points and regular collection for disposal;
- Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;
- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and
- A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites).

#### **Waste Reduction Measures**

Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:

- Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce;
- Any unused chemicals or those with remaining functional capacity shall be recycled;
- Use of reusable non-timber formwork to reduce the amount of C&D material;
- Prior to disposal of C&D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill;
- Proper storage and site practices to minimise the potential for damage or contamination of construction materials; and
- Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.

In addition to the above measures, specific mitigation measures are recommended below for the identified waste arising to minimise environmental impacts during handling, transportation and disposal of these wastes.

#### **Construction and Demolition Material**

In order to minimise the impact resulting from collection and transportation of inert C&D material for off-site disposal, it is recommended that the excavated fill material shall be re-used on-site as backfill material as far as possible. The surplus excavated material should be disposed of at the designated public fill reception facility, as agreed with the Secretary of the Public Fill Committee, for other beneficial uses. C&D waste would require disposal to the designated landfill site. In order to monitor the disposal of C&D materials at the public fill reception facility and landfill and to control fly-tipping, a trip-ticket system should be included (see ETWB TCW No. 31/2004 for details).

### **Chemical Wastes**

After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Spent chemicals should be collected by a licensed collector for disposal at the CWTC or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.

### **General Refuse**

General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material.

### **Ecology related**

Following EIAO-TM Annex 16 guidelines, mitigation measures are discussed in this section to avoid, minimise and compensate for identified ecological impacts.

#### **Avoid**

Construction activities should be confined to developed areas of low ecological value. There should be no direct impact on other habitats within the Study Area.

#### **Minimise**

Noise mitigation measures, including installation of noise-emitting construction plant away from egretry, careful scheduling of noisy works with high disturbance impact to avoid breeding season of ardeid species (i.e. mid March to August) to prevent impacts on nesting activities of Little Egret, operation of well-maintained machinery, and use of noise reduction facilities could be implemented to mitigate noise impacts arising from construction activities such as road widening and road paving. Temporary noise barrier should also be used to reduce the level of noise during construction. Noise impact would be minimised during operation phase as permanent noise barrier has been proposed to be constructed. These measures could minimise disturbance to habitats within and adjacent to the proposed Works Area.

In order to minimise the impact of construction dust to the vegetation and associated wildlife within and around the proposed Works Area, practical measures such as regular watering, complete coverage of dusty material storage piles, and the use of minimum practical height for dropping excavated material should be implemented.

Standard good site practice measures should be implemented and should include:

- Placement of equipment in designated Works Areas within the existing disturbed land.
- Construction activities should be restricted to the proposed Works Area.
- The proposed Works Area should be reinstated immediately after completion of the works.
- Open burning on proposed works site is illegal, and will be strictly enforced.

- Waste skips should be provided to collect general refuse and construction wastes, which should be disposed regularly and properly off-site.
- Soil contaminated by fuel leaked from construction plants should be removed and treated.

Mitigation measures should be implemented to prevent and minimise the indirect impacts to the nearby Tuen Mun River Channel by controlling construction site runoff and drainage from the proposed Works Area. Site runoff could be directed towards regularly cleaned and maintained sand traps, silt traps and where appropriate, oil/grease separators to minimise risk of sedimentation and pollution to the river channel. Debris and rubbish generated on-site should be collected, handled and disposed properly.

In order to prevent and minimise the chance of bird collision during operation phase, falcon sticker, tinted materials, embedded opaque stripes and superimposed patterns of thin opaque stripes are methods that could be used during the design of noise barrier.

### **Compensate**

Compensatory planting is recommended as the current roadside plantation must be removed to give way to the works. Species of choice should be composed of similar native species and the felling and planting ratio should be no less than 1:1 in terms of quality and quantity.

### **Landscape and Visual related**

- Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical.
- Existing trees to be retained on site should be carefully protected during construction.
- Trees unavoidably affected by the works should be transplanted where practical.
- Compensatory tree planting should be provided to compensate for felled trees.
- Control of night-time lighting.
- Erection of decorative screen hoarding compatible with the surrounding setting.

**Summary of Implementation Schedule of Mitigation Measures**

EIA Ref #	EM&A Ref#	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
<b>Noise Control</b>						
3.8.1	2.8.1	<p>Good site practice and management can significantly reduce the noise impact of construction site activities on nearby NSRs</p> <ul style="list-style-type: none"> <li>• only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works;</li> <li>• machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;</li> <li>• plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs;</li> <li>• mobile plant should be sited as far away from NSRs as possible; and</li> <li>• material stockpiles and other structures should be effectively utilized, where practicable, to screen noise from on-site construction activities.</li> </ul>	Works Sites / During Construction Phase	✓  ✓  ✓  ✓  ✓	✓  ✓  ✓  ✓  ✓	✓  ✓  ✓  ✓  ✓
3.8.4	2.8.3	Use of quieter mechanical equipment	Works Sites / During Construction Phase	✓	✓	✓
3.8.9	2.8.4	<p>Provision of movable noise barrier in the vicinity of the following NSRs</p> <ul style="list-style-type: none"> <li>• FEC (Far East Consortium Tuen Mun Central Building)</li> <li>• FM (Forward Mansion)</li> <li>• HTB (Hing Tai Building)</li> <li>• TMTP1 (Tuen Mun Town Plaza)</li> <li>• WG2 (Waldorf Garden)</li> <li>• CMA (CMA Choi Cheung Kok Secondary School)</li> <li>• LWF (Yan Oi Tong Madam Lau Wong Fat Primary School)</li> <li>• TMF (Tuen Mun Fa Yuen)</li> <li>• LCK (Lui Cheung Kwong Lutheran College)</li> </ul>	Works Sites from the listed NSRs / During Construction Phase	N/O	N/O	N/O

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref#	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
		<ul style="list-style-type: none"> <li>• CLFY1 (Chi Lok Fa Yuen)</li> <li>• TFH (On Ting Estate (Ting Fuk House))</li> <li>• LCKP (Lui Cheung Kwong Lutheran Primary School)</li> <li>• TTP (Tung Wah Group of Hospitals Tai Tung Pui Social Service Building)</li> <li>• CSBS (CSBS Mrs. Aw Boon Haw Secondary School)</li> <li>• KFG3D (Kam Fai Garden)</li> </ul>				
3.8.12	2.8.5	<p>Site clearance and the following activities not to be undertaken in the vicinity of the NSR LCK so as to reduce construction noise impact during normal teaching hours.</p> <ul style="list-style-type: none"> <li>• truck would not operate concurrently with other PMEs during tree transplanting and noise barrier foundation work.</li> <li>• tree transplanting would not be undertaken concurrently with bulk excavation and utilities diversion.</li> <li>• construction of storm water drain would not be undertaken concurrently with noise barrier/enclosure foundation.</li> <li>• construction of sub-base and road base would not be undertaken concurrently with noise barrier/enclosure installation.</li> <li>• road surfacing, construction of road kerbs, central dividers, parapets, and installation of crash cushion and sign gantry would not be undertaken concurrently.</li> <li>• installation of gantry and directional lighting, and street lighting would not be undertaken concurrently.</li> </ul>	Work site in the vicinity of Lui Cheung Kwong Lutheran College (LCK) / Stage 2 (Ch. 28050 – 28200 of TMR) during Construction Phase	✓	✓	✓

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref#	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
3.8.13	2.8.6	Liaise with all the relevant schools to check out their examination periods and activities in the beginning of the work programme in order to make good planning and arrangement of works and provide sufficient mitigation plans to alleviate noise impacts.	CMA Choi Cheung Kok Secondary School (CMA), Yan Oi Tong Madam Lau Wong Fat Primary School (LWF), Lui Cheung Kwong Lutheran College (LCK), Lui Cheung Kwong Lutheran Primary School (LCKP) and CSBS Mrs. Aw Boon Haw Secondary School (CSBS) / During Construction Phase	✓	✓	✓

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
		<b><i>Air Quality Control</i></b>				
4.8.1	3.11.2	Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation. <ul style="list-style-type: none"> <li>• skip hoist for material transport should be totally enclosed by impervious sheeting</li> <li>• every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site</li> </ul>	Works Sites / During Construction Phase	✓	✓	✓
				✓	✓	✓

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
		<ul style="list-style-type: none"> <li>the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores</li> <li>where a site boundary adjoins a road, streets or other accessible to the public, hording of not less than 2.4m high from ground level should be provided along the entire length except for a site entrance or exit</li> <li>every stack of more than 20 bags of cement should be covered entirely by impervious sheeting places in an area sheltered on the top and the 3 sides</li> <li>all dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet</li> <li>the height from which excavated materials are dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading</li> <li>the load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle</li> <li>instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.</li> </ul>		✓	✓	✓
				✓	✓	✓
				Rdr	✓	✓
				✓	✓	✓
				✓	✓	✓
				✓	✓	✓
				✓	✓	✓

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
		<b>Water Quality Control</b>				
5.8.2	4.3.2	Construction run-off and Drainage <ul style="list-style-type: none"> <li>Silt removal facilities such as silt traps or sedimentation facilities should be provided to remove silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of silt removal facilities should be based on the guidelines provided in ProPECC PN 1/94. All drainage facilities and erosion and sediment control structures should be inspected monthly and maintained to ensure proper and efficient operation at</li> </ul>	Works Sites / During Construction Phase	✓	✓	✓

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
		<p>all times and particularly during rainstorms.</p> <ul style="list-style-type: none"> <li>Careful programming of the works to minimise surface excavations for the road improvement works during the wet season. If excavation of soil cannot be avoided during the wet season, exposed slope surfaces should be covered by a tarpaulin or other means. Other measures that need to be implemented before, during, and after rainstorms are summarized in ProPECC PN 1/94.</li> <li>Exposed soil surfaces should be protected by paving or fill material as soon as possible to reduce the potential of soil erosion.</li> <li>Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. These materials should not be placed near water courses.</li> </ul>		✓	✓	✓
				✓	✓	✓
				Obs	✓	✓
5.8.3 - 5.8.4	4.3.3	<p>General Construction Activities</p> <ul style="list-style-type: none"> <li>Debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering the nearby local stormwater drainage system.</li> <li>Stockpiles of cement and other construction materials should be kept covered when not being used.</li> <li>Oils and fuels should only be used and stored in designated areas which have pollution prevention facilities. All fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event</li> </ul>	Works Sites / During Construction Phase	✓	✓	✓
				✓	✓	✓
				✓	✓	✓
5.8.5	4.3.4	<p>Sewage from Construction Workforce</p> <ul style="list-style-type: none"> <li>Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site. A licensed contractor would be responsible for appropriate disposal and maintenance of these facilities</li> </ul>	Works Sites / During Construction Phase	✓	✓	✓

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance



EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
		<b>Waste Management</b>				
6.6.1	5.2.2	<p><i>Good Site Practices</i></p> <ul style="list-style-type: none"> <li>Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.</li> <li>Training of site personnel in proper waste management and chemical waste handling procedures.</li> <li>Provision of sufficient waste disposal points and regular collection for disposal.</li> <li>Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.</li> <li>Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> <li>A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites).</li> </ul>	Works Sites / During Construction Phase	✓  Obs ✓ ✓ ✓	✓  ✓ ✓ ✓	✓  ✓ ✓ ✓
6.6.5	5.2.6	<p><i>Chemical Wastes</i></p> <ul style="list-style-type: none"> <li>After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.</li> <li>Spent chemicals should be collected by a licensed collector for disposal at the CWTC or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</li> </ul>	Works Sites / During Construction Phase	✓  ✓	✓  ✓	✓  ✓

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
6.6.6	5.2.7	<p><i>General Refuse</i></p> <ul style="list-style-type: none"> <li>General refuse should be stored in enclosed bins or compaction units separate from C&amp;D material.</li> <li>A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&amp;D material.</li> <li>An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material.</li> </ul>	Works Sites / During Construction Phase	✓	✓	✓
6.6.2	5.2.3	<p><i>Waste Reduction Measures</i></p> <p>Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> <li>Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.</li> <li>Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force.</li> <li>Any unused chemicals or those with remaining functional capacity shall be recycled.</li> <li>Use of reusable non-timber formwork to reduce the amount of C&amp;D material.</li> <li>Prior to disposal of C&amp;D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill.</li> <li>Proper storage and site practices to minimise the potential for damage or contamination of construction materials.</li> <li>Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.</li> </ul>	Works Sites / During Construction Phase	✓	✓	✓
				✓	✓	✓
				✓	✓	✓
				✓	✓	✓
				Obs	✓	✓
				✓	✓	✓
				✓	✓	✓

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
6.6.4	5.2.5	<p><i>Construction and Demolition (C&amp;D) Material</i></p> <ul style="list-style-type: none"> <li>The excavated fill material shall be re-used on-site as backfill material as far as possible.</li> <li>The surplus excavated material should be disposed of at the designated public fill reception facility, as agreed with the Secretary of the Public Fill Committee, for other beneficial uses.</li> <li>C&amp;D waste would require disposal to the designated landfill site.</li> <li>In order to monitor the disposal of C&amp;D materials at the public fill reception facility and landfill and to control fly-tipping, a trip-ticket system should be included. One may make reference to ETWB TCW No. 31/2004 for details.</li> </ul>	Works Sites / During Construction Phase	✓  ✓  Obs ✓	✓  ✓  ✓ ✓	✓  ✓  ✓ ✓

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
		<b>Ecology</b>				
7.9.2	6.2.2	Construction activities should be confined to developed areas of low ecological value, and there should be no direct impact on other habitats within the Study Area.	Works Sites / During Construction Phase	✓	✓	✓
7.9.3	6.2.3	Noise mitigation measures, including installation of noise-emitting construction plant away from egret, careful scheduling of noisy works with high disturbance impact to avoid breeding season of ardeid species (i.e. mid March to August) to prevent impacts on nesting activities of Little Egret, operation of well-maintained machinery, careful programming of works and use of noise reduction facilities could be implemented to mitigate noise impacts arising from construction activities such as road widening and road paving. Temporary noise barrier should also be used to reduce the level of noise during construction. Noise impact would be minimised during operation phase as permanent noise barrier has been proposed to be constructed. The use of low noise road surfacing could also reduce the level of noise during operation.	Works Sites / During Construction Phase	✓	✓	✓
7.9.4	6.2.4	In order to minimise the impact of construction dust to the vegetation and associated wildlife within and around the proposed Works Area, the following mitigation measures should be implemented: <ul style="list-style-type: none"> <li>regular watering</li> <li>complete coverage of dusty material storage piles</li> <li>the use of minimum practical height for dropping excavated material</li> </ul>	Works Sites / During Construction Phase	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓
7.9.6	6.2.6	To minimise the indirect impacts to the nearby Tuen Mun River Channel, the following mitigation measures should be implemented: <ul style="list-style-type: none"> <li>Site runoff could be directed towards regularly cleaned and maintained sand traps, silt traps and where appropriate</li> <li>Oil/grease separators to minimise risk of sedimentation and pollution to the river channel.</li> <li>Debris and rubbish generated on-site should be collected, handled and disposed properly.</li> </ul>	Works Sites / During Construction Phase	✓ N/O ✓	✓ N/O ✓	✓ N/O ✓

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
7.9.5	6.2.5	Standard good site practice measures should be implemented and should include: <ul style="list-style-type: none"> <li>• Placement of equipment in designated Works Areas within the existing disturbed land.</li> <li>• Construction activities should be restricted to the proposed Works Area.</li> <li>• The proposed Works Area should be reinstated immediately after completion of the works.</li> <li>• Open burning on proposed works site is illegal, and will be strictly enforced.</li> <li>• Waste skips should be provided to collect general refuse and construction wastes, which should be disposed regularly and properly off-site.</li> <li>• Soil contaminated by fuel leaked from construction plants should be removed and treated.</li> </ul>	Works Sites / During Construction Phase	✓ ✓ ✓ ✓ ✓ N/O	✓ ✓ ✓ ✓ ✓ N/O	✓ ✓ ✓ ✓ ✓ N/O
7.9.7	6.2.7	To minimise the chance of bird collision during operation phase, falcon sticker, tinted materials, embedded opaque stripes and superimposed patterns of thin opaque stripes are methods that could be used during the design of noise barrier.	Works Sites / During Operation Phase	N/O	N/O	N/O
7.9.8	6.2.8	Compensatory planting is recommended as the current roadside plantation must be removed to give way to the works. Species of choice should be composed of similar native species and the felling and planting ratio should be no less than 1:1 in terms of quantity.	Works Sites / During Operation Phase	N/O	N/O	N/O

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
<b><i>Landscape and Visual</i></b>						
Table 8.8	7.3.1	CM1 Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical.	Works Sites / During Construction Phase	✓	✓	✓
Table 8.8	7.3.1	CM2 Existing trees to be retained on site should be carefully protected during construction.		✓	✓	✓
Table 8.8	7.3.1	CM3 Trees unavoidably affected by the works should be transplanted where practical.		✓	✓	✓
Table 8.8	7.3.1	CM4 Compensatory tree planting should be provided to compensate for felled trees.		✓	✓	✓
Table 8.8	7.3.1	CM5 Control of night-time lighting.		✓	✓	✓
Table 8.8	7.3.1	CM6 Erection of decorative screen hoarding compatible with the surrounding setting.		✓	✓	✓

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
		<b><i>Land Contamination</i></b>				
9.8.3	8.2.2	<p>To minimize construction workers' potential contact with the contaminated materials</p> <ul style="list-style-type: none"> <li>The use of bulk earth-moving excavator equipment would minimise construction workers' potential contact with the contaminated materials;</li> <li>Exposure to any contaminated materials can be minimised by the wearing of appropriate clothing and personal protective equipment such as gloves (when interacting directly with suspected contaminated material), providing adequate hygiene and washing facilities and preventing smoking and eating during such activities;</li> <li>Stockpiling of contaminated soil should be avoided as far as possible. If this cannot be avoided, the stockpile of contaminated materials should be segregated from the uncontaminated ones. Moreover, the contaminated materials should be properly covered with waterproof material (e.g. tarpaulin sheet) to avoid leaching of contaminants, especially during rainy season.</li> <li>Vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates should be sealed to prevent any leakage during transport or during wet conditions;</li> <li>Only licensed waste haulers should be used to collect and transport any contaminated material to an appropriate disposal site and procedures should be developed to ensure that illegal disposal of waste does not occur;</li> <li>Necessary waste disposal permits should be obtained, as required, from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 35), as required;</li> <li>Records of the quantities of wastes generated and disposed of should be maintained; Adequate washing facilities should be provided on site; and</li> <li>In accordance with good construction practice, silt traps should be used to reduce the impact to drainage caused by suspended solids arising from disturbed ground,</li> </ul>	Excavation zones / During excavation	N/O	N/O	N/O

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				May 13	Jun 13	Jul 13
		or any construction materials such as cement and gravel. Groundwater should be disposed of in accordance with the Water Pollution Control Ordinance (Cap 358).				

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance



Appendix C

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**Impact Air Monitoring  
Results**

**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section  
Impact Air Quality Monitoring Result at Mrs Aw Boon Haw Secondary School (AM1) - 24 hour TSP**

Filter No.	Month	Date	Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m <sup>3</sup> /min)		Average Flow Rate (m <sup>3</sup> /min)	Elapse Time		Sampling Time	Total vol. (m <sup>3</sup> )	(ug/m <sup>3</sup> ) AM1
						Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish			
131074	May-13	2-May-13	AM1	Fine	Normal Operation	756.0	756.0	22.0	23.0	40.0	40.0	2.761	2.8251	0.0641	1.2050	1.2027	1.2039	14209.30	14233.30	1440.00	1733.54	37.0
131080	May-13	8-May-13	AM1	Rainy	Normal Operation	753.0	754.0	24.0	25.0	40.0	40.0	2.7979	2.8431	0.0452	1.1976	1.1962	1.1969	14233.30	14257.30	1440.00	1723.54	26.2
131086	May-13	14-May-13	AM1	Fine	Normal Operation	756.0	756.0	23.0	25.0	40.0	40.0	2.7971	2.8344	0.0373	1.2739	1.2691	1.2715	14257.30	14281.30	1440.00	1830.96	20.4
131092	May-13	20-May-13	AM1	Cloudy	Normal Operation	755.0	754.0	28.0	26.0	40.0	40.0	2.8042	2.8413	0.0371	1.2609	1.2648	1.2629	14281.30	14305.30	1440.00	1818.50	20.4
131099	May-13	25-May-13	AM1	Rainy	Normal Operation	755.0	756.0	29.0	28.0	40.0	40.0	2.8014	2.8351	0.0337	1.2586	1.2619	1.2603	14305.30	14329.30	1440.00	1814.76	18.6
131111	Jun-13	3-Jun-13	AM1	Fine	Normal Operation	754.0	755.0	26.0	26.0	40.0	40.0	3.6031	3.6260	0.0229	1.2648	1.2658	1.2653	14353.30	14377.30	1440.00	1822.03	12.6
131117	Jun-13	8-Jun-13	AM1	Cloudy	Normal Operation	753.0	754.0	29.0	28.0	40.0	40.0	3.6004	3.6243	0.0239	1.2568	1.2600	1.2584	14377.30	14401.30	1440.00	1812.10	13.2
131123	Jun-13	14-Jun-13	AM1	Rainy	Normal Operation	756.0	756.0	29.0	29.0	40.0	40.0	3.6058	3.6330	0.0272	1.2596	1.2596	1.2596	14401.30	14425.30	1440.00	1813.82	15.0
131129	Jun-13	20-Jun-13	AM1	Fine	Normal Operation	755.0	754.0	28.0	26.0	40.0	40.0	3.6292	3.6697	0.0405	1.2609	1.2648	1.2629	14425.30	14449.30	1440.00	1818.50	22.3
131135	Jun-13	26-Jun-13	AM1	Fine	Normal Operation	755.0	756.0	25.0	25.0	40.0	40.0	3.6411	3.6878	0.0467	1.2681	1.2691	1.2686	14449.30	14473.30	1440.00	1826.78	25.6
131141	Jul-13	2-Jul-13	AM1	Fine	Normal Operation	755.0	755.0	29.0	29.0	40.0	40.0	3.6456	3.7368	0.0912	1.2586	1.2586	1.2586	14473.30	14497.30	1440.00	1812.38	50.3
131147	Jul-13	8-Jul-13	AM1	Fine	Normal Operation	753.0	753.0	29.0	30.0	40.0	40.0	3.65	3.6763	0.0263	1.1827	1.1805	1.1816	14497.30	14521.30	1440.00	1701.50	15.5
131153	Jul-13	13-Jul-13	AM1	Fine	Normal Operation	753.0	751.0	30.0	30.0	40.0	40.0	3.6444	3.6820	0.0376	1.1805	1.1789	1.1797	14521.30	14545.30	1440.00	1698.77	22.1
131159	Jul-13	19-Jul-13	AM1	Fine	Normal Operation	754.0	754.0	27.0	27.0	40.0	40.0	3.6482	3.6679	0.0197	1.1877	1.1877	1.1877	14545.30	14569.30	1440.00	1710.29	11.5
131165	Jul-13	25-Jul-13	AM1	Fine	Normal Operation	754.0	754.0	28.0	28.0	40.0	40.0	3.6561	3.6799	0.0238	1.1856	1.1856	1.1856	14569.30	14593.30	1440.00	1707.26	13.9
131171	Jul-13	31-Jul-13	AM1	Fine	Normal Operation	754.0	754.0	28.0	28.0	40.0	40.0	3.6535	3.6800	0.0265	1.1856	1.1856	1.1856	14593.30	14617.30	1440.00	1707.26	15.5

<b>Average (ug/m<sup>3</sup>)</b>	21.3
<b>Max (ug/m<sup>3</sup>)</b>	50.3
<b>Min (ug/m<sup>3</sup>)</b>	11.5

<b>Action Level (ug/m<sup>3</sup>)</b>	146
<b>Limit Level (ug/m<sup>3</sup>)</b>	260

**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section  
Impact Air Quality Monitoring Result at Tai Tung Pui Social Service Building (AM2) - 24 hour TSP**

Filter No.	Month	Date	Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m <sup>3</sup> /min)		Average Flow Rate (m <sup>3</sup> /min)	Elapse Time		Sampling Time	Total vol. (m <sup>3</sup> )	(ug/m <sup>3</sup> ) AM2
						Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish			
131075	May-13	2-May-13	AM2	Fine	Normal Operation	756.0	756.0	22.0	23.0	40.0	40.0	2.8005	2.8248	0.0243	1.1985	1.1964	1.1975	8363.10	8387.10	1440.00	1724.33	14.1
131081	May-13	8-May-13	AM2	Rainy	Normal Operation	753.0	754.0	24.0	25.0	40.0	40.0	2.796	2.8394	0.0434	1.1919	1.1906	1.1913	8387.10	8411.10	1440.00	1715.40	25.3
131087	May-13	14-May-13	AM2	Fine	Normal Operation	756.0	756.0	23.0	25.0	40.0	40.0	2.7986	2.8220	0.0234	1.1575	1.1531	1.1553	8411.10	8435.10	1440.00	1663.63	14.1
131093	May-13	20-May-13	AM2	Cloudy	Normal Operation	755.0	754.0	28.0	26.0	40.0	40.0	2.7954	2.8389	0.0435	1.1457	1.1492	1.1475	8435.10	8459.10	1440.00	1652.33	26.3
131100	May-13	25-May-13	AM2	Rainy	Normal Operation	755.0	756.0	29.0	28.0	40.0	40.0	2.8007	2.8370	0.0363	1.1437	1.1466	1.1452	8459.10	8483.10	1440.00	1649.02	22.0
131112	Jun-13	3-Jun-13	AM2	Fine	Normal Operation	754.0	755.0	26.0	26.0	40.0	40.0	3.5918	3.6310	0.0392	1.1492	1.1501	1.1497	8507.10	8531.10	1440.00	1655.50	23.7
131118	Jun-13	8-Jun-13	AM2	Cloudy	Normal Operation	753.0	754.0	29.0	28.0	40.0	40.0	3.6018	3.6211	0.0193	1.1420	1.1449	1.1435	8531.10	8555.10	1440.00	1646.57	11.7
131124	Jun-13	14-Jun-13	AM2	Rainy	Normal Operation	756.0	756.0	29.0	29.0	40.0	40.0	3.6056	3.6305	0.0249	1.1445	1.1445	1.1445	8555.10	8579.10	1440.00	1648.08	15.1
131130	Jun-13	20-Jun-13	AM2	Fine	Normal Operation	755.0	754.0	28.0	26.0	40.0	40.0	3.6334	3.6716	0.0382	1.1457	1.1492	1.1475	8579.10	8603.10	1440.00	1652.33	23.1
131136	Jun-13	26-Jun-13	AM2	Fine	Normal Operation	755.0	756.0	25.0	25.0	40.0	40.0	3.6454	3.6793	0.0339	1.1522	1.1531	1.1527	8603.10	8627.10	1440.00	1659.82	20.4
131142	Jul-13	2-Jul-13	AM2	Fine	Normal Operation	755.0	755.0	29.0	29.0	40.0	40.0	3.6426	3.6997	0.0571	1.1437	1.1437	1.1437	8627.10	8651.10	1440.00	1646.93	34.7
131148	Jul-13	8-Jul-13	AM2	Fine	Normal Operation	753.0	753.0	29.0	30.0	40.0	40.0	3.6512	3.6657	0.0145	1.1183	1.1161	1.1172	8651.10	8675.10	1440.00	1608.77	9.0
131154	Jul-13	13-Jul-13	AM2	Fine	Normal Operation	753.0	751.0	30.0	30.0	40.0	40.0	3.6421	3.6614	0.0193	1.1161	1.1143	1.1152	8675.10	8699.10	1440.00	1605.89	12.0
131160	Jul-13	19-Jul-13	AM2	Fine	Normal Operation	754.0	754.0	27.0	27.0	40.0	40.0	3.646	3.6720	0.0260	1.1236	1.1236	1.1236	8699.10	8723.10	1440.00	1617.98	16.1
131166	Jul-13	25-Jul-13	AM2	Fine	Normal Operation	754.0	754.0	28.0	28.0	40.0	40.0	3.6522	3.6780	0.0258	1.1213	1.1213	1.1213	8723.10	8747.10	1440.00	1614.67	16.0
131172	Jul-13	31-Jul-13	AM2	Fine	Normal Operation	754.0	754.0	28.0	28.0	40.0	40.0	3.6542	3.6740	0.0198	1.1213	1.1213	1.1213	8747.10	8771.10	1440.00	1614.67	12.3

<b>Average (ug/m<sup>3</sup>)</b>	18.5
<b>Max (ug/m<sup>3</sup>)</b>	34.7
<b>Min (ug/m<sup>3</sup>)</b>	9.0

<b>Action Level (ug/m<sup>3</sup>)</b>	151
<b>Limit Level (ug/m<sup>3</sup>)</b>	260

**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section  
Impact Air Quality Monitoring Result at Wu Siu Kui Primary School (AM3) - 24 hour TSP**

Filter No.	Month	Date	Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m <sup>3</sup> /min)		Average Flow Rate (m <sup>3</sup> /min)	Elapse Time		Sampling Time	Total vol. (m <sup>3</sup> )	(ug/m <sup>3</sup> ) AM3
						Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish			
131076	May-13	2-May-13	AM3	Fine	Normal Operation	756.0	756.0	22.0	23.0	40.0	40.0	2.798	2.8135	0.0155	1.2096	1.2070	1.2083	12529.39	12553.39	1440.00	1739.95	8.9
131082	May-13	8-May-13	AM3	Rainy	Normal Operation	753.0	754.0	24.0	25.0	40.0	40.0	2.8048	2.8931	0.0883	1.2014	1.1998	1.2006	12553.39	12577.39	1440.00	1728.86	51.1
131088	May-13	14-May-13	AM3	Fine	Normal Operation	756.0	756.0	23.0	25.0	40.0	40.0	2.8055	2.8427	0.0372	1.1398	1.1345	1.1372	12577.39	12601.39	1440.00	1637.50	22.7
131094	May-13	20-May-13	AM3	Cloudy	Normal Operation	755.0	754.0	28.0	26.0	40.0	40.0	2.7932	2.8492	0.0560	1.1258	1.1300	1.1279	12601.39	12625.39	1440.00	1624.18	34.5
131101	May-13	25-May-13	AM3	Rainy	Normal Operation	755.0	756.0	29.0	28.0	40.0	40.0	2.8086	2.8573	0.0487	1.1233	1.1268	1.1251	12625.39	12649.39	1440.00	1620.07	30.1
131113	Jun-13	3-Jun-13	AM3	Fine	Normal Operation	754.0	755.0	26.0	26.0	40.0	40.0	3.5967	3.6220	0.0253	1.1300	1.1310	1.1305	12673.39	12697.39	1440.00	1627.92	15.5
131119	Jun-13	8-Jun-13	AM3	Cloudy	Normal Operation	753.0	754.0	29.0	28.0	40.0	40.0	3.6015	3.6264	0.0249	1.1213	1.1248	1.1231	12697.39	12721.39	1440.00	1617.19	15.4
131125	Jun-13	14-Jun-13	AM3	Rainy	Normal Operation	756.0	756.0	29.0	29.0	40.0	40.0	3.6075	3.6317	0.0242	1.1243	1.1243	1.1243	12721.39	12745.39	1440.00	1618.99	14.9
131131	Jun-13	20-Jun-13	AM3	Fine	Normal Operation	755.0	754.0	28.0	26.0	40.0	40.0	3.6492	3.6800	0.0308	1.1258	1.1300	1.1279	12745.39	12769.39	1440.00	1624.18	19.0
131137	Jun-13	26-Jun-13	AM3	Fine	Normal Operation	755.0	756.0	25.0	25.0	40.0	40.0	3.643	3.6840	0.0410	1.1335	1.1345	1.1340	12769.39	12793.39	1440.00	1632.96	25.1
131143	Jul-13	2-Jul-13	AM3	Fine	Normal Operation	755.0	755.0	29.0	29.0	40.0	40.0	3.6472	3.6680	0.0208	1.1233	1.1233	1.1233	12793.39	12817.39	1440.00	1617.55	12.9
131149	Jul-13	8-Jul-13	AM3	Fine	Normal Operation	753.0	753.0	29.0	30.0	40.0	40.0	3.6550	3.6792	0.0242	1.1201	1.1179	1.1190	12817.39	12841.39	1440.00	1611.36	15.0
131155	Jul-13	13-Jul-13	AM3	Fine	Normal Operation	753.0	751.0	30.0	30.0	40.0	40.0	3.6462	3.6758	0.0296	1.1179	1.1161	1.1170	12841.39	12865.39	1440.00	1608.48	18.4
131161	Jul-13	19-Jul-13	AM3	Fine	Normal Operation	754.0	754.0	27.0	27.0	40.0	40.0	3.6523	3.6867	0.0344	1.1255	1.1255	1.1255	12865.39	12889.39	1440.00	1620.72	21.2
131167	Jul-13	25-Jul-13	AM3	Fine	Normal Operation	754.0	754.0	28.0	28.0	40.0	40.0	3.6541	3.6767	0.0226	1.1232	1.1232	1.1232	12889.39	12913.39	1440.00	1617.41	14.0
131173	Jul-13	31-Jul-13	AM3	Fine	Normal Operation	754.0	754.0	28.0	28.0	40.0	40.0	3.6604	3.6875	0.0271	1.1232	1.1232	1.1232	12913.39	12937.39	1440.00	1617.41	16.8

<b>Average (ug/m<sup>3</sup>)</b>	21.0
<b>Max (ug/m<sup>3</sup>)</b>	51.1
<b>Min (ug/m<sup>3</sup>)</b>	8.9

<b>Action Level (ug/m<sup>3</sup>)</b>	150
<b>Limit Level (ug/m<sup>3</sup>)</b>	260

**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section  
Impact Air Quality Monitoring Result at Choi Cheung Kok Secondary School (AM4) - 24 hour TSP**

Filter No.	Month	Date	Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m <sup>3</sup> /min)		Average Flow Rate (m <sup>3</sup> /min)	Elapse Time		Sampling Time	Total vol. (m <sup>3</sup> )	(ug/m <sup>3</sup> ) AM4
						Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish			
131077	May-13	2-May-13	AM4	Fine	Normal Operation	756.0	756.0	22.0	23.0	40.0	40.0	2.8004	2.8322	0.0318	1.1354	1.1328	1.1341	13411.12	13435.12	1440.00	1633.10	19.5
131083	May-13	8-May-13	AM4	Rainy	Normal Operation	753.0	754.0	24.0	25.0	40.0	40.0	2.8004	2.8885	0.0881	1.1271	1.1254	1.1263	13435.12	13459.12	1440.00	1621.80	54.3
131089	May-13	14-May-13	AM4	Fine	Normal Operation	756.0	756.0	23.0	25.0	40.0	40.0	2.8032	2.8304	0.0272	1.2139	1.2093	1.2116	13459.12	13483.12	1440.00	1744.70	15.6
131095	May-13	20-May-13	AM4	Cloudy	Normal Operation	755.0	754.0	28.0	26.0	40.0	40.0	2.8072	2.8462	0.0390	1.2015	1.2052	1.2034	13483.12	13507.12	1440.00	1732.82	22.5
131102	May-13	25-May-13	AM4	Rainy	Normal Operation	755.0	756.0	29.0	28.0	40.0	40.0	2.8086	2.8427	0.0341	1.1993	1.2024	1.2009	13507.12	13531.12	1440.00	1729.22	19.7
131114	Jun-13	3-Jun-13	AM4	Fine	Normal Operation	754.0	755.0	26.0	26.0	40.0	40.0	3.5957	3.6578	0.0621	1.2052	1.2061	1.2057	13555.12	13579.12	1440.00	1736.14	35.8
131120	Jun-13	8-Jun-13	AM4	Cloudy	Normal Operation	753.0	754.0	29.0	28.0	40.0	40.0	3.6007	3.6205	0.0198	1.1976	1.2006	1.1991	13579.12	13603.12	1440.00	1726.70	11.5
131126	Jun-13	14-Jun-13	AM4	Rainy	Normal Operation	756.0	756.0	29.0	29.0	40.0	40.0	3.6088	3.6319	0.0231	1.2002	1.2002	1.2002	13603.12	13627.12	1440.00	1728.29	13.4
131132	Jun-13	20-Jun-13	AM4	Fine	Normal Operation	755.0	754.0	28.0	26.0	40.0	40.0	3.637	3.6653	0.0283	1.2015	1.2052	1.2034	13627.12	13651.12	1440.00	1732.82	16.3
131138	Jun-13	26-Jun-13	AM4	Fine	Normal Operation	755.0	756.0	25.0	25.0	40.0	40.0	3.6374	3.6536	0.0162	1.2084	1.2093	1.2089	13651.12	13675.12	1440.00	1740.74	9.3
131144	Jul-13	2-Jul-13	AM4	Fine	Normal Operation	755.0	755.0	29.0	29.0	40.0	40.0	3.6478	3.6755	0.0277	1.1993	1.1993	1.1993	13675.12	13699.12	1440.00	1726.99	16.0
131150	Jul-13	8-Jul-13	AM4	Fine	Normal Operation	753.0	753.0	29.0	30.0	40.0	40.0	3.6495	3.7180	0.0685	1.1039	1.1017	1.1028	13699.12	13723.12	1440.00	1588.03	43.1
131156	Jul-13	13-Jul-13	AM4	Fine	Normal Operation	753.0	751.0	30.0	30.0	40.0	40.0	3.6548	3.6773	0.0225	1.1017	1.1000	1.1009	13723.12	13747.12	1440.00	1585.22	14.2
131162	Jul-13	19-Jul-13	AM4	Fine	Normal Operation	754.0	754.0	27.0	27.0	40.0	40.0	3.6583	3.6880	0.0297	1.1091	1.1091	1.1091	13747.12	13771.12	1440.00	1597.10	18.6
131168	Jul-13	25-Jul-13	AM4	Fine	Normal Operation	754.0	754.0	28.0	28.0	40.0	40.0	3.6516	3.6700	0.0184	1.1069	1.1069	1.1069	13771.12	13795.12	1440.00	1593.94	11.5
131174	Jul-13	31-Jul-13	AM4	Fine	Normal Operation	754.0	754.0	28.0	28.0	40.0	40.0	3.6601	3.6773	0.0172	1.1069	1.1069	1.1069	13795.12	13819.12	1440.00	1593.94	10.8

<b>Average (ug/m<sup>3</sup>)</b>	20.8
<b>Max (ug/m<sup>3</sup>)</b>	54.3
<b>Min (ug/m<sup>3</sup>)</b>	9.3

<b>Action Level (ug/m<sup>3</sup>)</b>	150
<b>Limit Level (ug/m<sup>3</sup>)</b>	260

**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section  
Impact Air Quality Monitoring Result at Tuen Mun Town Hall (AM5) - 24 hour TSP**

Filter No.	Month	Date	Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m <sup>3</sup> /min)		Average Flow Rate (m <sup>3</sup> /min)	Elapse Time		Sampling Time	Total vol. (m <sup>3</sup> )	(ug/m <sup>3</sup> ) AM5
						Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish			
131078	May-13	2-May-13	AM5	Fine	Normal Operation	756.0	756.0	22.0	23.0	40.0	40.0	2.803	2.8354	0.0324	1.1115	1.1094	1.1105	13197.27	13221.27	1440.00	1599.05	20.3
131084	May-13	8-May-13	AM5	Rainy	Normal Operation	753.0	754.0	24.0	25.0	40.0	40.0	2.795	2.8299	0.0349	1.1050	1.1038	1.1044	13221.27	13245.27	1440.00	1590.34	21.9
131090	May-13	14-May-13	AM5	Fine	Normal Operation	756.0	756.0	23.0	25.0	40.0	40.0	2.7986	2.8292	0.0306	1.1470	1.1429	1.1450	13245.27	13269.27	1440.00	1648.73	18.6
131096	May-13	20-May-13	AM5	Cloudy	Normal Operation	755.0	754.0	28.0	26.0	40.0	40.0	2.8164	2.8519	0.0355	1.1359	1.1392	1.1376	13269.27	13293.27	1440.00	1638.07	21.7
131103	May-13	25-May-13	AM5	Rainy	Normal Operation	755.0	756.0	29.0	28.0	40.0	40.0	2.8056	2.8418	0.0362	1.1340	1.1367	1.1354	13293.27	13317.27	1440.00	1634.90	22.1
131115	Jun-13	3-Jun-13	AM5	Fine	Normal Operation	754.0	755.0	26.0	26.0	40.0	40.0	3.5865	3.6145	0.0280	1.1392	1.1400	1.1396	13341.27	13365.27	1440.00	1641.02	17.1
131121	Jun-13	8-Jun-13	AM5	Cloudy	Normal Operation	753.0	754.0	29.0	28.0	40.0	40.0	3.6011	3.6179	0.0168	1.1324	1.1351	1.1338	13365.27	13389.27	1440.00	1632.60	10.3
131127	Jun-13	14-Jun-13	AM5	Rainy	Normal Operation	756.0	756.0	29.0	29.0	40.0	40.0	3.6114	3.6349	0.0235	1.1348	1.1348	1.1348	13389.27	13413.27	1440.00	1634.11	14.4
131133	Jun-13	20-Jun-13	AM5	Fine	Normal Operation	755.0	754.0	28.0	26.0	40.0	40.0	3.6351	3.6663	0.0312	1.1359	1.1392	1.1376	13413.27	13437.27	1440.00	1638.07	19.0
131139	Jun-13	26-Jun-13	AM5	Fine	Normal Operation	755.0	756.0	25.0	25.0	40.0	40.0	3.6392	3.6911	0.0519	1.1421	1.1429	1.1425	13437.27	13461.27	1440.00	1645.20	31.5
131145	Jul-13	2-Jul-13	AM5	Fine	Normal Operation	755.0	755.0	29.0	29.0	40.0	40.0	3.6449	3.7015	0.0566	1.1340	1.1340	1.1340	13461.27	13485.27	1440.00	1632.96	34.7
131151	Jul-13	8-Jul-13	AM5	Fine	Normal Operation	753.0	753.0	29.0	30.0	40.0	40.0	3.6523	3.6712	0.0189	1.1287	1.1266	1.1277	13485.27	13509.27	1440.00	1623.82	11.6
131157	Jul-13	13-Jul-13	AM5	Fine	Normal Operation	753.0	751.0	30.0	30.0	40.0	40.0	3.6474	3.6697	0.0223	1.1266	1.1250	1.1258	13509.27	13533.27	1440.00	1621.15	13.8
131163	Jul-13	19-Jul-13	AM5	Fine	Normal Operation	754.0	754.0	27.0	27.0	40.0	40.0	3.6467	3.6674	0.0207	1.1335	1.1335	1.1335	13533.27	13557.27	1440.00	1632.24	12.7
131169	Jul-13	25-Jul-13	AM5	Fine	Normal Operation	754.0	754.0	28.0	28.0	40.0	40.0	3.6532	3.6715	0.0183	1.1314	1.1314	1.1314	13557.27	13581.27	1440.00	1629.22	11.2
131175	Jul-13	31-Jul-13	AM5	Fine	Normal Operation	754.0	754.0	28.0	28.0	40.0	40.0	3.6691	3.6995	0.0304	1.1314	1.1314	1.1314	13581.27	13605.27	1440.00	1629.22	18.7

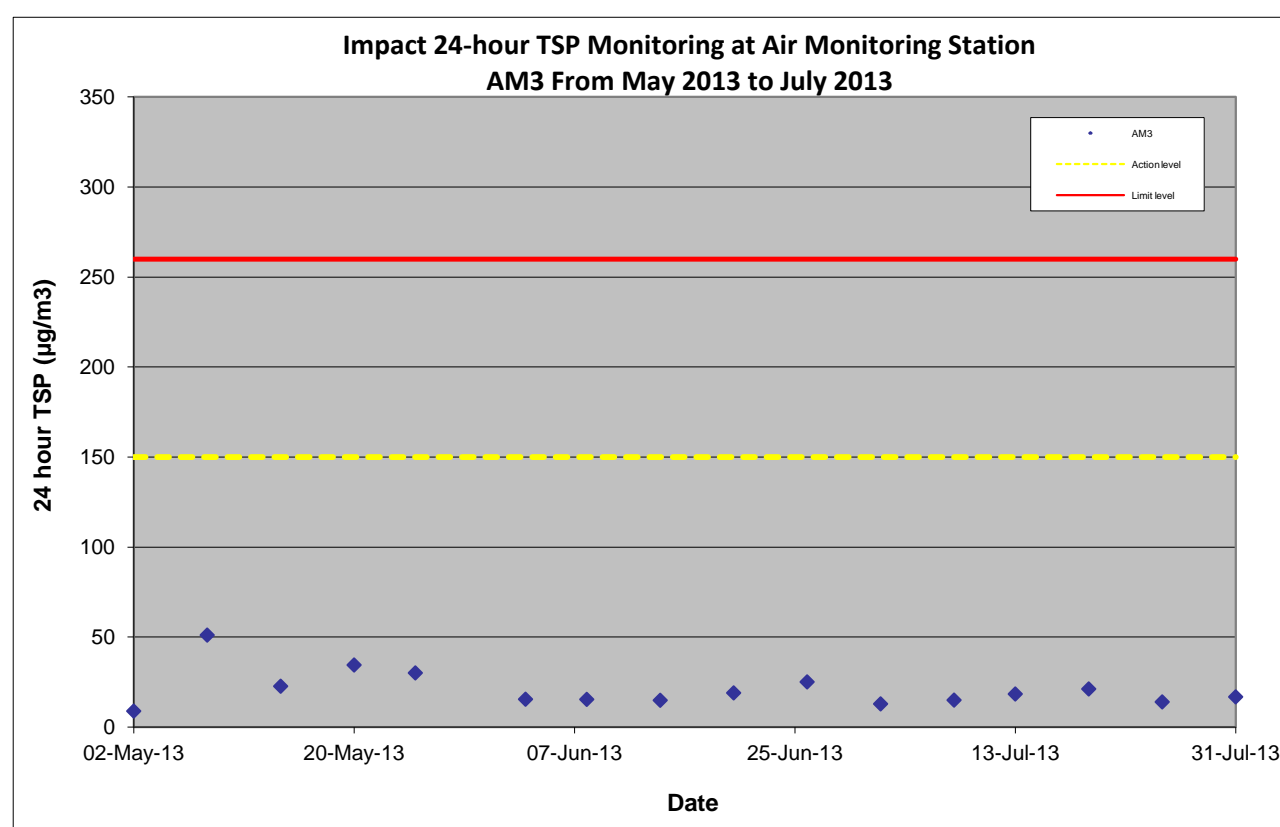
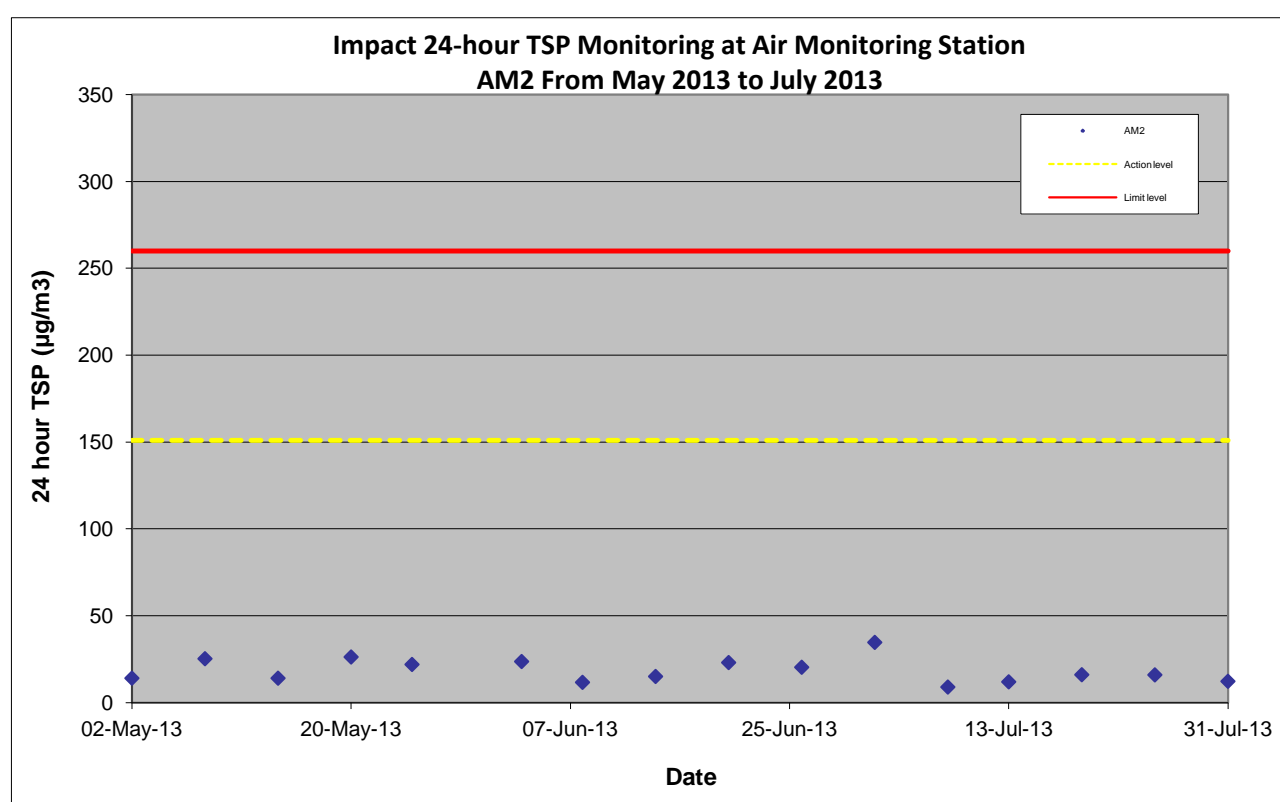
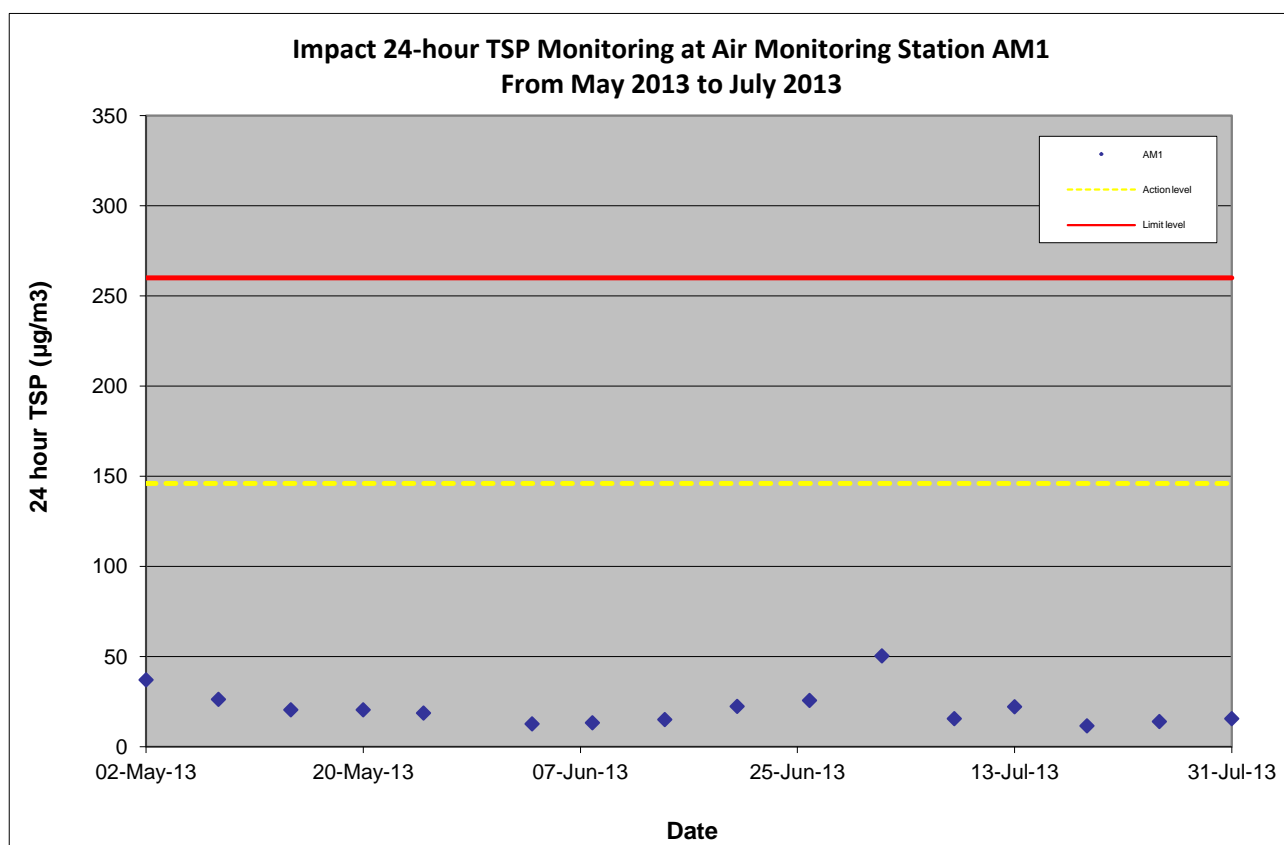
<b>Average (ug/m<sup>3</sup>)</b>	18.7
<b>Max (ug/m<sup>3</sup>)</b>	34.7
<b>Min (ug/m<sup>3</sup>)</b>	10.3
<b>Action Level (ug/m<sup>3</sup>)</b>	146
<b>Limit Level (ug/m<sup>3</sup>)</b>	260

**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section  
Impact Air Quality Monitoring Result at Yan Oi Tong Community and Sports Centre (AM6) - 24 hour TSP**

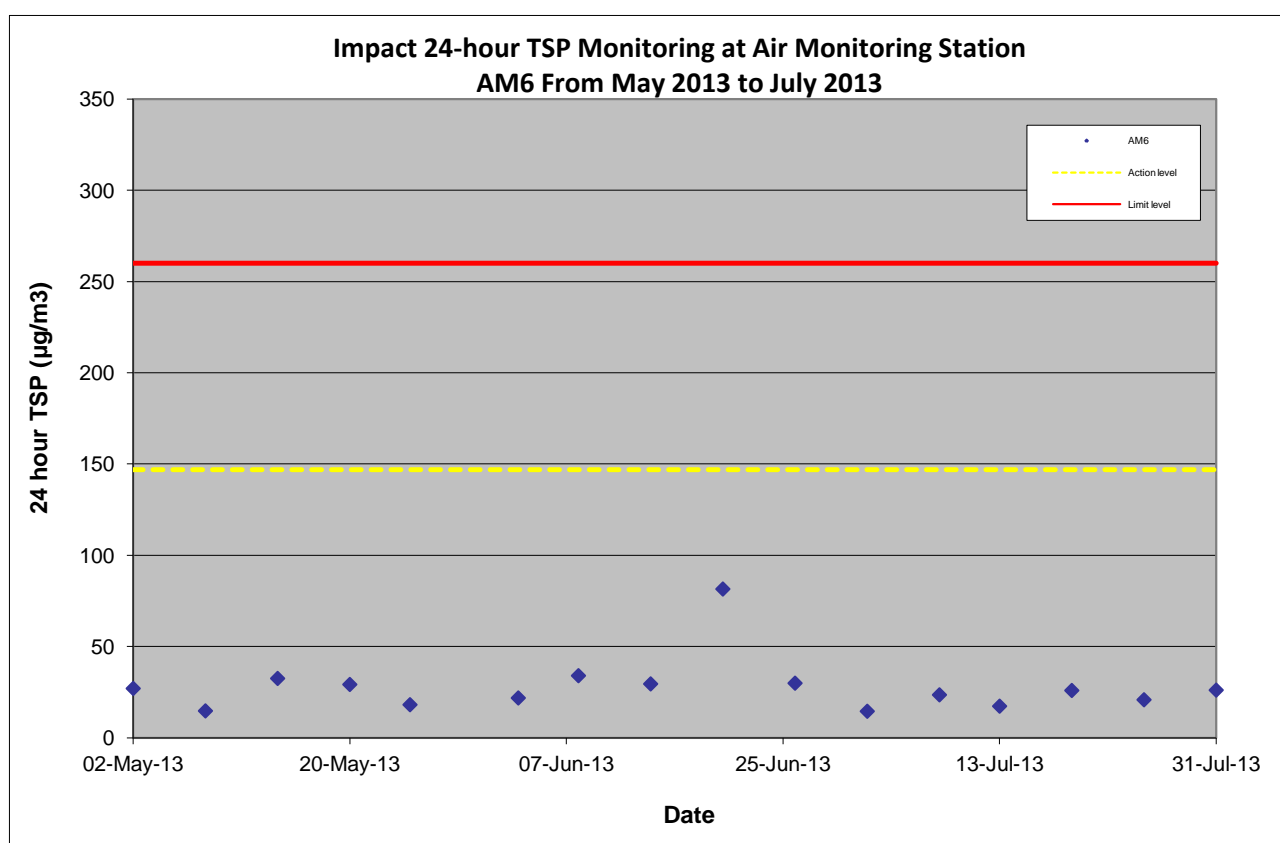
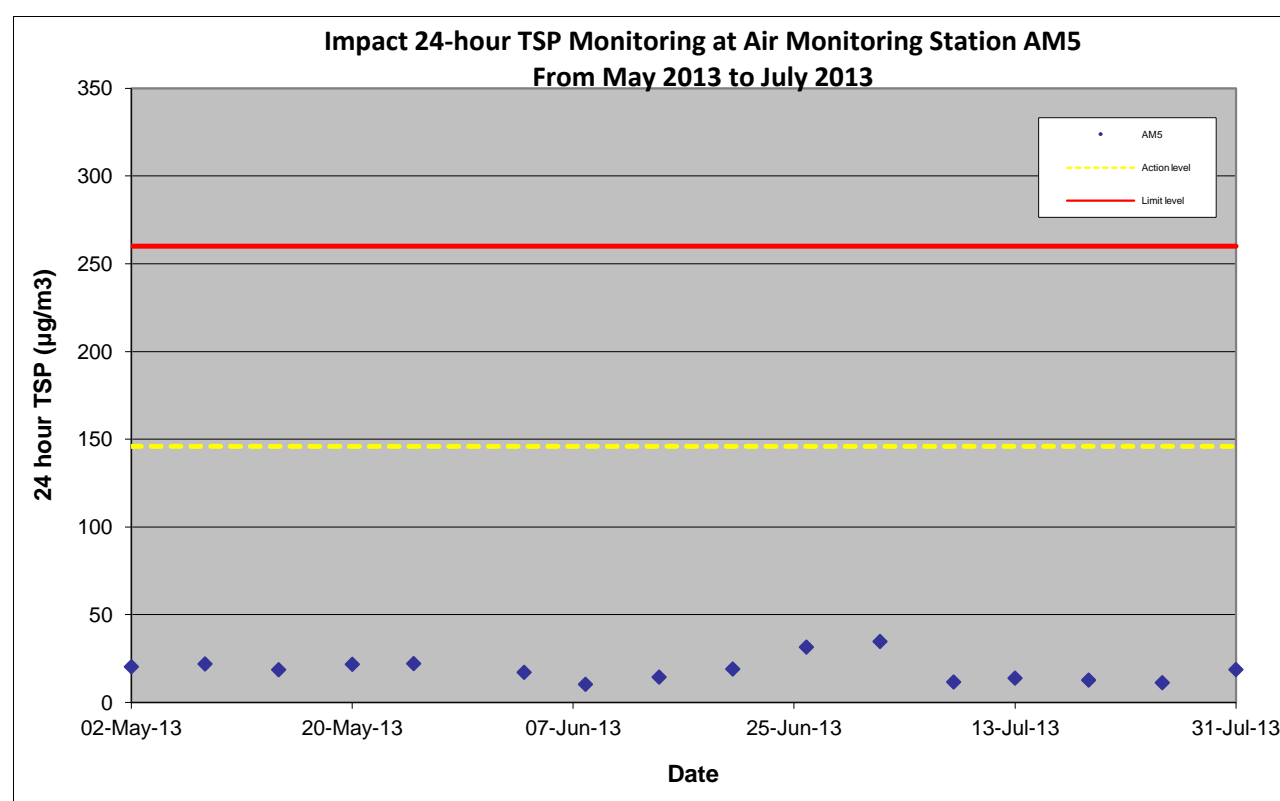
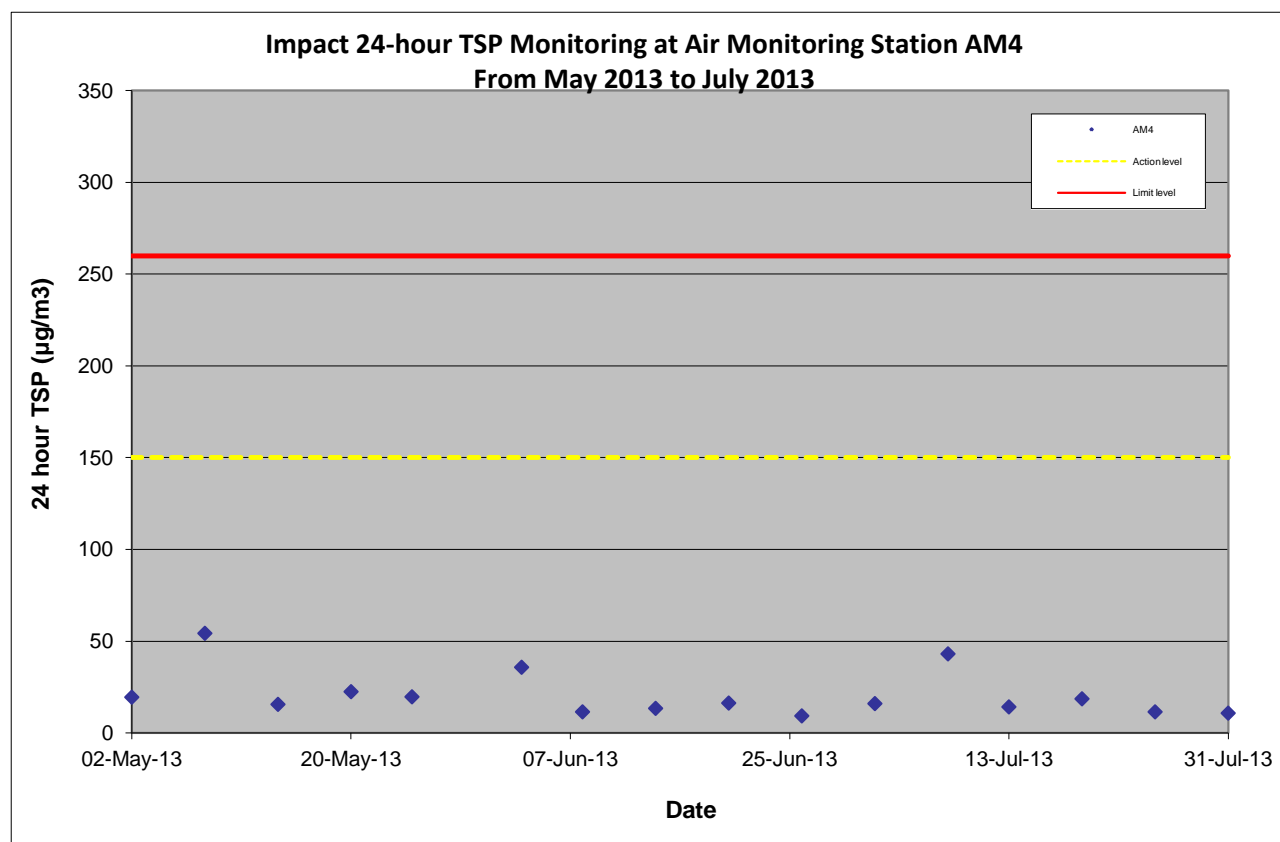
Filter No.	Month	Date	Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m <sup>3</sup> /min)		Average Flow Rate (m <sup>3</sup> /min)	Elapse Time		Sampling Time (mins.)	Total vol. (m <sup>3</sup> )	(ug/m <sup>3</sup> ) AM6
						Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish			
131079	May-13	2-May-13	AM6	Fine	Normal Operation	756.0	756.0	22.0	23.0	40.0	40.0	2.807	2.8509	0.0439	1.1309	1.1288	1.1299	9530.80	9554.80	1440.00	1626.98	27.0
131085	May-13	8-May-13	AM6	Rainy	Normal Operation	753.0	754.0	24.0	25.0	40.0	40.0	2.788	2.8118	0.0238	1.1241	1.1227	1.1234	9554.80	9578.80	1440.00	1617.70	14.7
131091	May-13	14-May-13	AM6	Fine	Normal Operation	756.0	756.0	23.0	25.0	40.0	40.0	2.7985	2.8528	0.0543	1.1641	1.1587	1.1614	9578.80	9602.80	1440.00	1672.42	32.5
131098	May-13	20-May-13	AM6	Cloudy	Normal Operation	755.0	754.0	28.0	26.0	40.0	40.0	2.8024	2.8508	0.0484	1.1496	1.1540	1.1518	9602.80	9626.80	1440.00	1658.59	29.2
131104	May-13	25-May-13	AM6	Rainy	Normal Operation	755.0	756.0	29.0	28.0	40.0	40.0	2.8163	2.8462	0.0299	1.1471	1.1507	1.1489	9626.80	9650.80	1440.00	1654.42	18.1
131116	Jun-13	3-Jun-13	AM6	Fine	Normal Operation	754.0	755.0	26.0	26.0	40.0	40.0	3.5961	3.6324	0.0363	1.1540	1.1550	1.1545	9674.80	9698.80	1440.00	1662.48	21.8
131122	Jun-13	8-Jun-13	AM6	Cloudy	Normal Operation	753.0	754.0	29.0	28.0	40.0	40.0	3.6062	3.6623	0.0561	1.1450	1.1486	1.1468	9698.80	9722.80	1440.00	1651.39	34.0
131128	Jun-13	14-Jun-13	AM6	Rainy	Normal Operation	756.0	756.0	29.0	29.0	40.0	40.0	3.6272	3.6760	0.0488	1.1481	1.1481	1.1481	9722.80	9746.80	1440.00	1653.26	29.5
131134	Jun-13	20-Jun-13	AM6	Fine	Normal Operation	755.0	754.0	28.0	26.0	40.0	40.0	3.6389	3.7740	0.1351	1.1496	1.1540	1.1518	9746.80	9770.80	1440.00	1658.59	81.5
131140	Jun-13	26-Jun-13	AM6	Fine	Normal Operation	755.0	756.0	25.0	25.0	40.0	40.0	3.6429	3.6927	0.0498	1.1576	1.1587	1.1582	9770.80	9794.80	1440.00	1667.74	29.9
131146	Jul-13	2-Jul-13	AM6	Fine	Normal Operation	755.0	755.0	29.0	29.0	40.0	40.0	3.6454	3.6694	0.0240	1.1471	1.1471	1.1471	9794.80	9818.80	1440.00	1651.82	14.5
131152	Jul-13	8-Jul-13	AM6	Fine	Normal Operation	753.0	753.0	29.0	30.0	40.0	40.0	3.6533	3.6917	0.0384	1.1361	1.1341	1.1351	9818.80	9842.80	1440.00	1634.54	23.5
131158	Jul-13	13-Jul-13	AM6	Fine	Normal Operation	753.0	751.0	30.0	30.0	40.0	40.0	3.652	3.6802	0.0282	1.1341	1.1325	1.1333	9842.80	9866.80	1440.00	1631.95	17.3
131164	Jul-13	19-Jul-13	AM6	Fine	Normal Operation	754.0	754.0	28.0	28.0	40.0	40.0	3.6556	3.6980	0.0424	1.1388	1.1388	1.1388	9866.80	9890.80	1440.00	1639.87	25.9
131170	Jul-13	25-Jul-13	AM6	Fine	Normal Operation	754.0	754.0	28.0	28.0	40.0	40.0	3.6562	3.6903	0.0341	1.1388	1.1388	1.1388	9890.80	9914.80	1440.00	1639.87	20.8
131176	Jul-13	31-Jul-13	AM6	Fine	Normal Operation	754.0	754.0	28.0	28.0	40.0	40.0	3.6670	3.7098	0.0428	1.1388	1.1388	1.1388	9914.80	9938.80	1440.00	1639.87	26.1

<b>Average (ug/m<sup>3</sup>)</b>	27.9
<b>Max (ug/m<sup>3</sup>)</b>	81.5
<b>Min (ug/m<sup>3</sup>)</b>	14.5

<b>Action Level (ug/m<sup>3</sup>)</b>	147
<b>Limit Level (ug/m<sup>3</sup>)</b>	260







Appendix D

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**Wind Data**

### Wind Monitoring Data - May 2013

Date	Wind Direction (degree)	Wind Speed (km/h)
2-May-13	60	44.4
8-May-13	70	30.4
14-May-13	130	17.3
20-May-13	230	25.8
25-May-13	140	17.4
30-May-13	240	7.9

Source extracted from Hong Kong Observatory (HKO)

### Wind Monitoring Data - Jun 2013

Date	Wind Direction (degree)	Wind Speed (km/h)
3-Jun-13	240	20.2
8-Jun-13	230	22.6
14-Jun-13	70	52.4
20-Jun-13	170	11.8
26-Jun-13	230	32.1

Source extracted from Hong Kong Observatory (HKO)

### Wind Monitoring Data - Jul 2013

Date	Wind Direction (degree)	Wind Speed (km/h)
2-Jul-13	160	31.2
8-Jul-13	200	16.6
13-Jul-13	280	32.2
19-Jul-13	60	27.6
25-Jul-13	170	25.5
31-Jul-13	90	29.7

Source extracted from Hong Kong Observatory (HKO)

Appendix E

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**Impact Noise  
Monitoring Results**

**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 3 May 2013**

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> 30min	Limit	L <sub>10</sub> 5min	L <sub>90</sub> 5min	L <sub>Aeq</sub> 30min	L <sub>Aeq</sub> 30min
N1	Kam Fai Garden	09:45 - 10:15	71	75	74	69	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35 - 11:05	72	75	74	69	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:25 - 11:55	67	70	68	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:35 - 09:05	66	70	67	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:10 - 13:40	69	75	71	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	14:00 - 14:30	68	70	69	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 9 May 2013**

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> 30min	Limit	L <sub>10</sub> 5min	L <sub>90</sub> 5min	L <sub>Aeq</sub> 30min	L <sub>Aeq</sub> 30min
N1	Kam Fai Garden	09:45 - 10:15	73	75	75	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35 - 11:05	73	75	75	71	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:25 - 11:55	67	70	69	66	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:35 - 09:05	66	70	68	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:10 - 13:40	70	75	72	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	14:00 - 14:30	68	70	70	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 15 May 2013**

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> 30min	Limit	L <sub>10</sub> 5min	L <sub>90</sub> 5min	L <sub>Aeq</sub> 30min	L <sub>Aeq</sub> 30min
N1	Kam Fai Garden	9:55-10:25	72	75	75	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:40-11:10	73	75	75	71	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:20-11:50	67	70	69	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	8:40-9:10	66	70	69	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	69	75	72	66	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	67	70	69	65	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 21 May 2013**

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> 30min	Limit	L <sub>10</sub> 5min	L <sub>90</sub> 5min	L <sub>Aeq</sub> 30min	L <sub>Aeq</sub> 30min
N1	Kam Fai Garden	10:00-10:30	72	75	74	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:45-11:15	73	75	75	70	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:30-12:00	67	70	69	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	8:30-9:00	67	70	69	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:20-13:50	70	75	72	68	70	54
N6	Choi Cheung kok Secondary School	14:30-15:00	68	70	70	67	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 27 May 2013**

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> 30min	Limit	L <sub>10</sub> 5min	L <sub>90</sub> 5min	L <sub>Aeq</sub> 30min	L <sub>Aeq</sub> 30min
N1	Kam Fai Garden	9:50-10:20	73	75	75	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35-11:05	73	75	75	71	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:15-11:45	67	70	70	66	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:30-09:00	66	70	68	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	69	75	72	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	68	70	70	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 4 June 2013**

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> 30min	Limit	L <sub>10</sub> 5min	L <sub>90</sub> 5min	L <sub>Aeq</sub> 30min	L <sub>Aeq</sub> 30min
N1	Kam Fai Garden	09:45 - 10:15	71	75	74	69	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35 - 11:05	72	75	74	69	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:25 - 11:55	66	65	67	64	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:35 - 09:05	65	65	67	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:10 - 13:40	69	75	71	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	14:00 - 14:30	67	70	69	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level  
 (#): Limit Level of 65 dB(A) is adopted for N3 and N4 due to school examination hours

**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 10 June 2013**

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> 30min	Limit	L <sub>10</sub> 5min	L <sub>90</sub> 5min	L <sub>Aeq</sub> 30min	L <sub>Aeq</sub> 30min
N1	Kam Fai Garden	09:45 - 10:15	72	75	74	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35 - 11:05	72	75	75	70	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:25 - 11:55	66	65	68	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:35 - 09:05	65	70	68	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:10 - 13:40	70	75	72	68	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	14:00 - 14:30	67	70	70	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level  
 (#): Limit Level of 65 dB(A) is adopted for N3 due to school examination hours

**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 18 June 2013**

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> 30min	Limit	L <sub>10</sub> 5min	L <sub>90</sub> 5min	L <sub>Aeq</sub> 30min	L <sub>Aeq</sub> 30min
N1	Kam Fai Garden	9:55-10:25	71	75	74	69	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:40-11:10	73	75	75	71	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:20-11:50	66	70	68	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	8:40-9:10	66	70	68	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	69	75	71	66	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	67	65	69	65	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level  
 (#): Limit Level of 65 dB(A) is adopted for N6 due to school examination hours

**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 24 June 2013**

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> 30min	Limit	L <sub>10</sub> 5min	L <sub>90</sub> 5min	L <sub>Aeq</sub> 30min	L <sub>Aeq</sub> 30min
N1	Kam Fai Garden	10:00-10:30	72	75	74	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:45-11:15	73	75	75	70	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:30-12:00	66	70	68	64	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	8:30-9:00	65	70	68	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:20-13:50	70	75	72	68	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	14:30-15:00	68	70	70	67	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 4 July 2013**

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> ,30min	Limit	L <sub>10</sub> ,5min	L <sub>90</sub> ,5min	L <sub>Aeq</sub> ,30min	L <sub>Aeq</sub> ,30min
N1	Kam Fai Garden	9:50-10:20	72	75	74	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35-11:05	72	75	74	70	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:15-11:45	66	70	69	66	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:30-09:00	66	70	67	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	68	75	71	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	68	70	70	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 10 July 2013**

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> ,30min	Limit	L <sub>10</sub> ,5min	L <sub>90</sub> ,5min	L <sub>Aeq</sub> ,30min	L <sub>Aeq</sub> ,30min
N1	Kam Fai Garden	10:00-10:30	72	75	74	69	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:45-11:15	72	75	75	70	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:30-12:00	67	70	69	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	8:30-9:00	65	70	68	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:20-13:50	69	75	72	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	14:30-15:00	68	70	71	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 17 July 2013**

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> ,30min	Limit	L <sub>10</sub> ,5min	L <sub>90</sub> ,5min	L <sub>Aeq</sub> ,30min	L <sub>Aeq</sub> ,30min
N1	Kam Fai Garden	9:50-10:20	72	75	75	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35-11:05	73	75	75	71	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:15-11:45	68	70	69	66	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:30-09:00	65	70	67	63	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	69	75	71	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	68	70	70	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 22 July 2013**

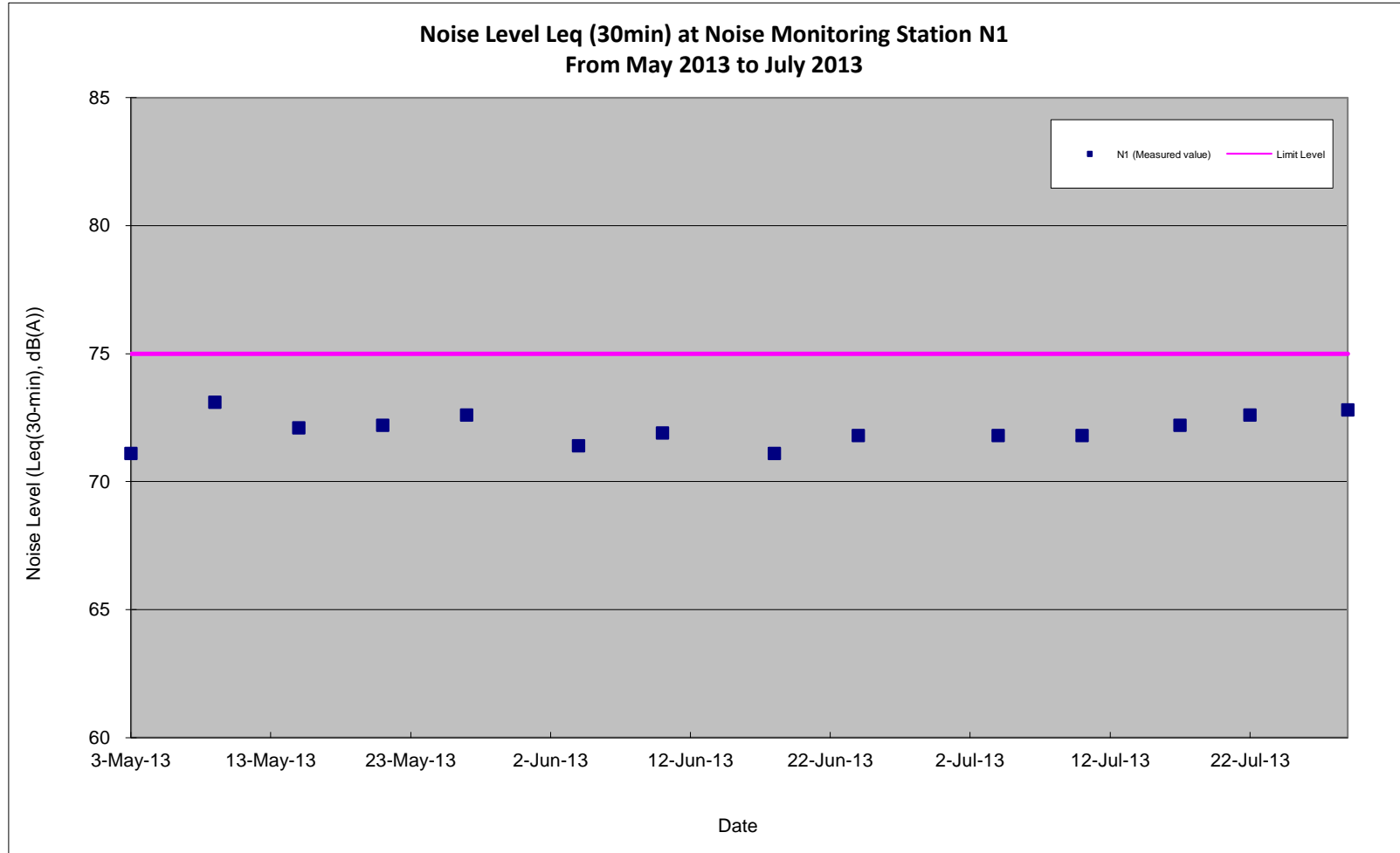
ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> ,30min	Limit	L <sub>10</sub> ,5min	L <sub>90</sub> ,5min	L <sub>Aeq</sub> ,30min	L <sub>Aeq</sub> ,30min
N1	Kam Fai Garden	9:50-10:20	73	75	75	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35-11:05	73	75	75	71	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:15-11:45	68	70	69	66	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:30-09:00	65	70	67	63	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	69	75	71	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	67	70	69	65	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

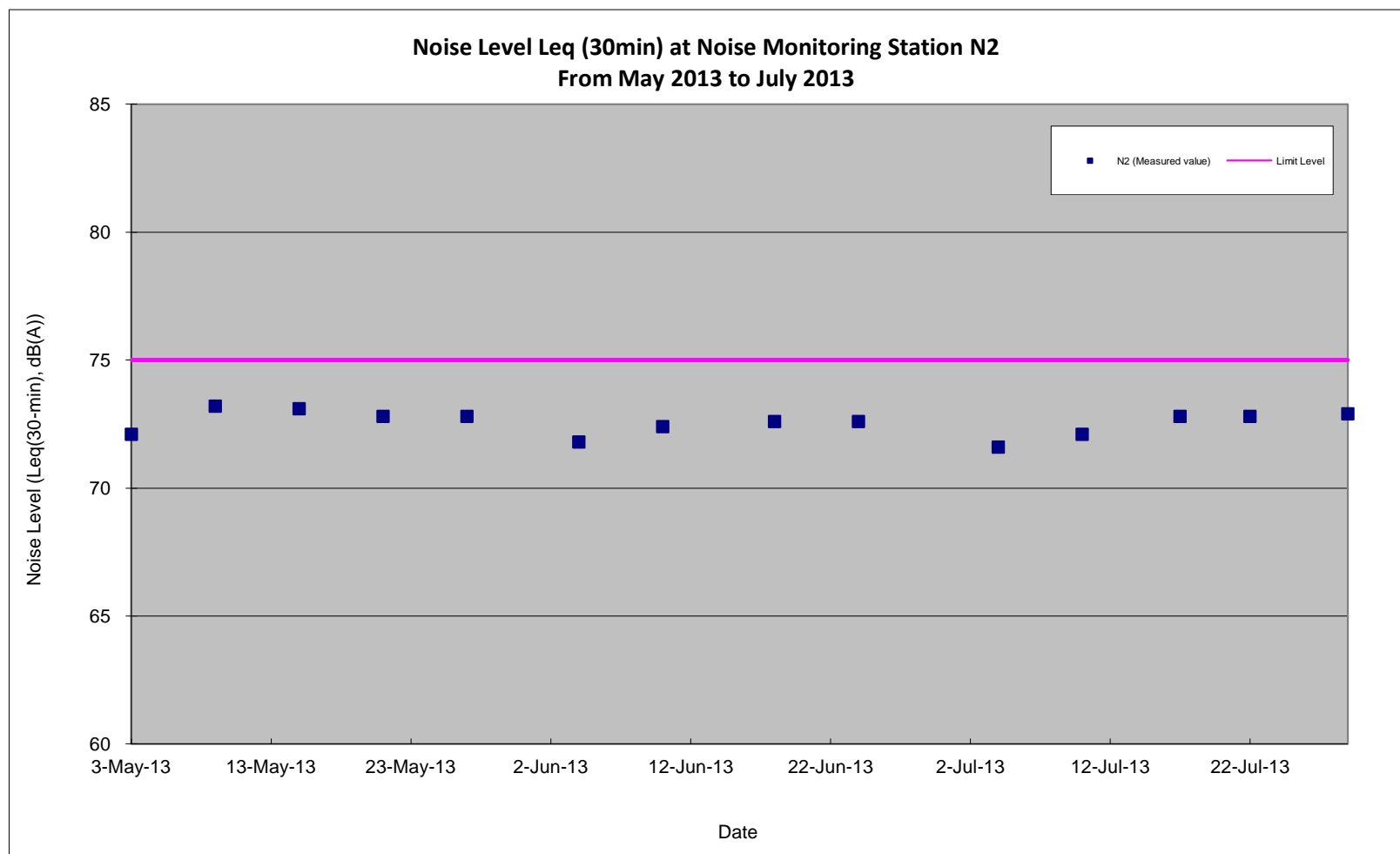
**Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team**  
**Day-time Noise Monitoring Results - 29 July 2013**

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L <sub>Aeq</sub> ,30min	Limit	L <sub>10</sub> ,5min	L <sub>90</sub> ,5min	L <sub>Aeq</sub> ,30min	L <sub>Aeq</sub> ,30min
N1	Kam Fai Garden	9:50-10:20	73	75	75	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35-11:05	73	75	75	71	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:15-11:45	68	70	69	66	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	8:30-9:00	65	70	68	63	67	Measured ≤ Baseline
N5	Tuen King Building	13:20-13:50	69	75	72	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	14:30-15:00	68	70	70	66	69	Measured ≤ Baseline

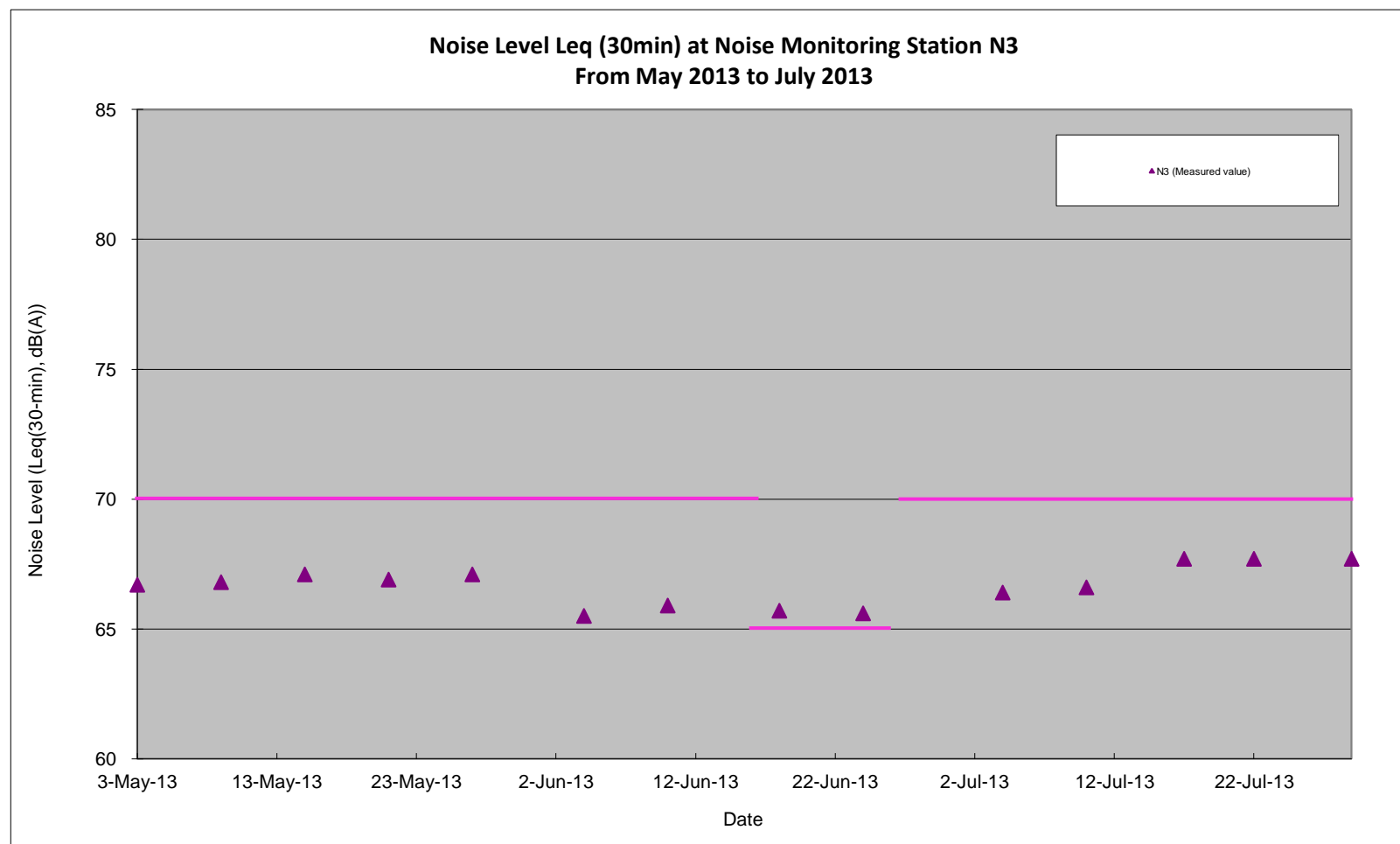
Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level



Note: For compliance comparison, please refer to above table and report.

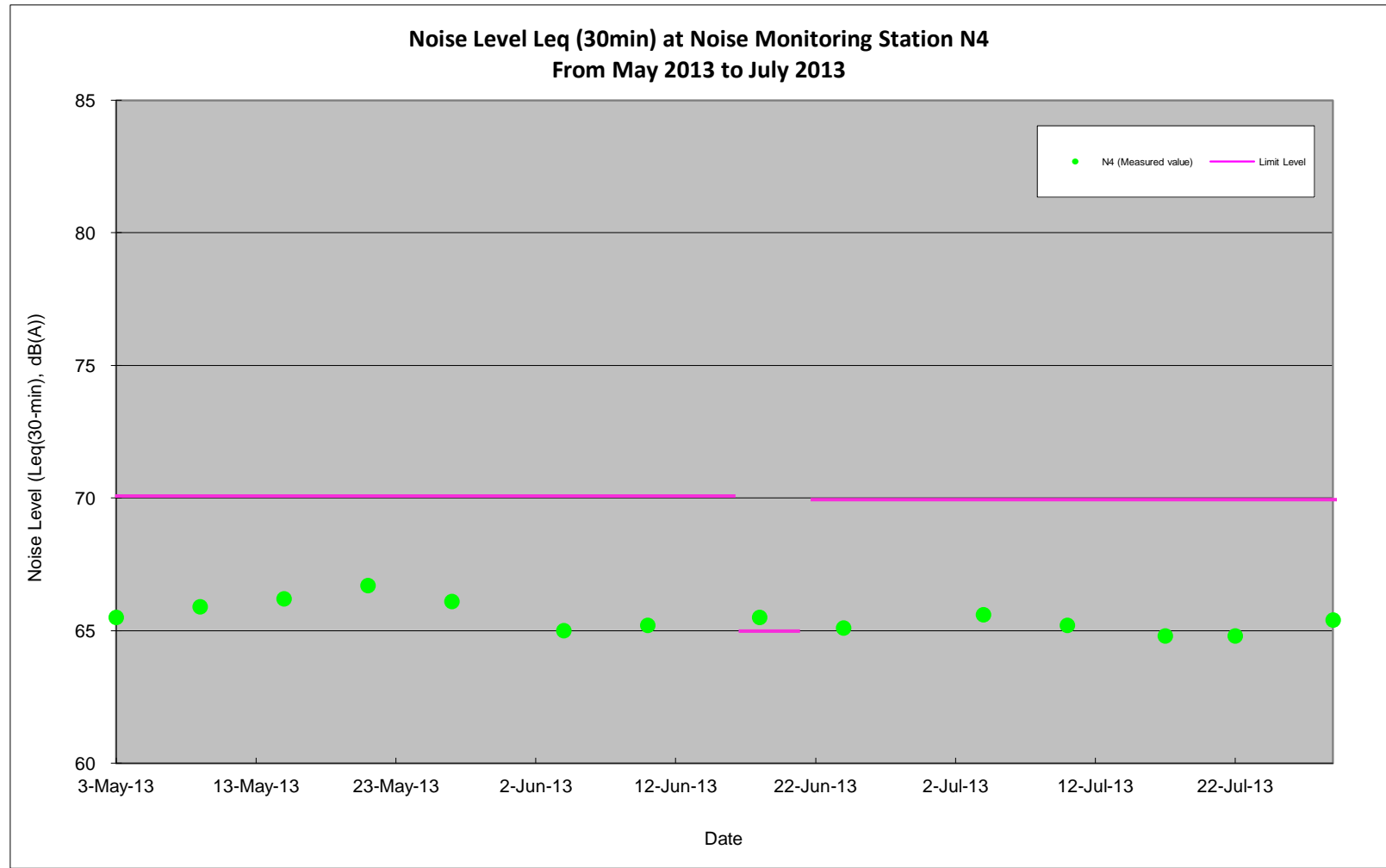


Note: For compliance comparison, please refer to above table and report.

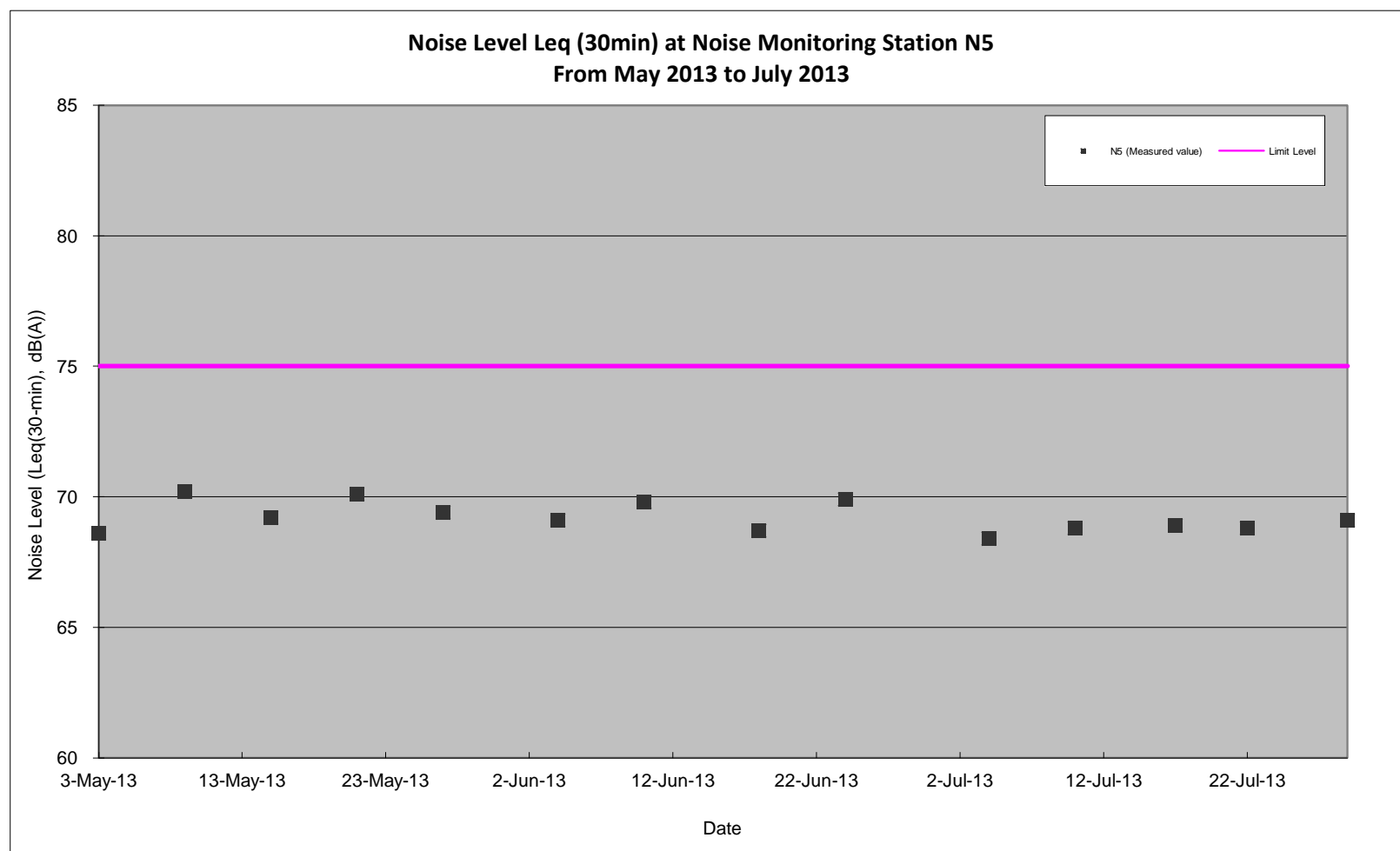


Note: For compliance comparison, please refer to above table and report.

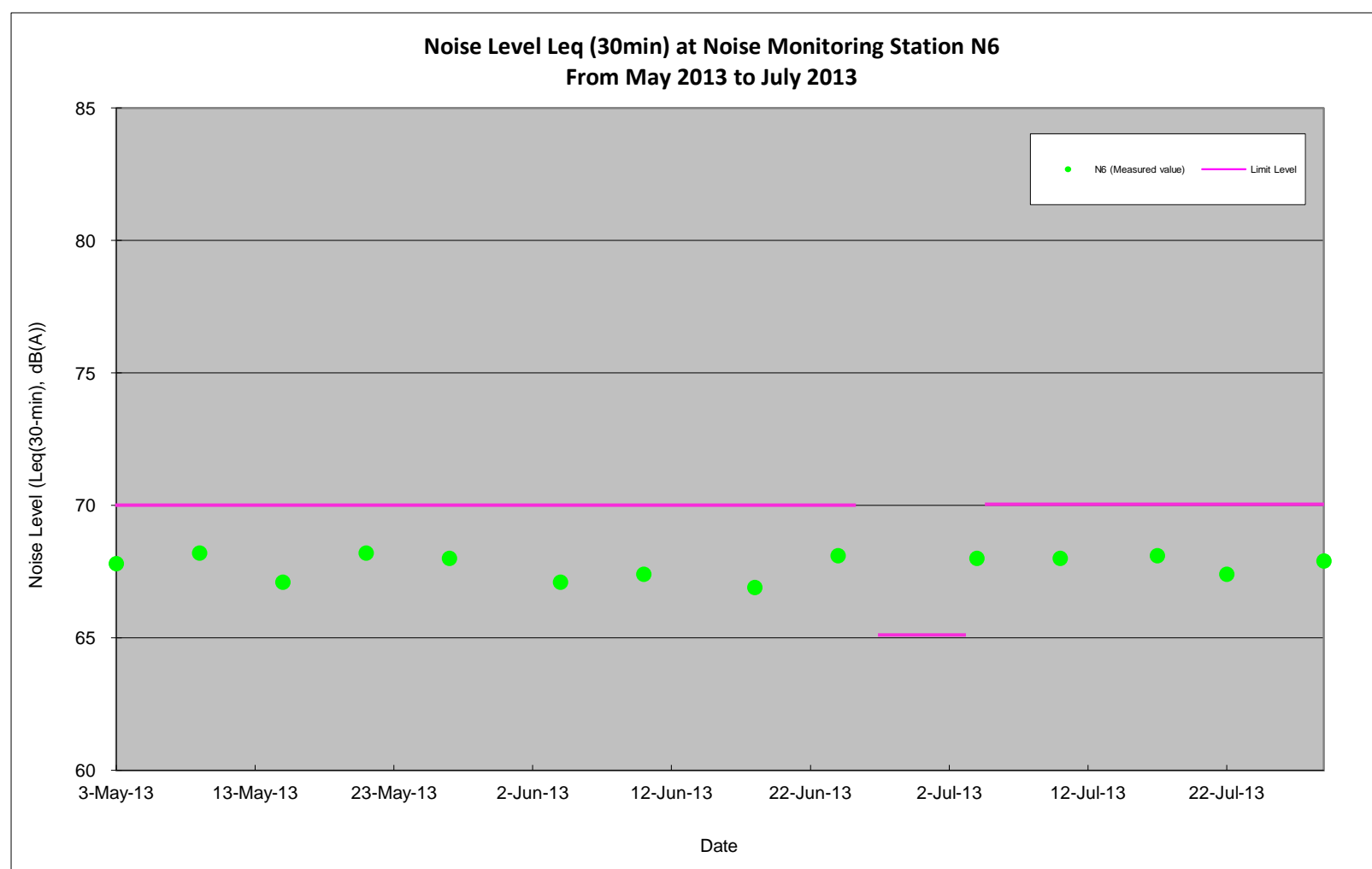




Note: For compliance comparison, please refer to above table and report.



Note: For compliance comparison, please refer to above table and report.



Note: For compliance comparison, please refer to above table and report.

Appendix F

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**Details of LR, LCA and  
VSR**

### Landscape and Visual Impact Monitoring Locations

The landscape and visual conditions of the site and its vicinity shall be reviewed with regards to parameters assessed in the EIA Report, including landscape resources (LR), landscape character area (LCA) and view condition of visual sensitive receiver (VSR). The components of each assessed parameter of LR, LCA and VSR are summarised in **Tables A**.

**Table A** Parameters of landscape resources, landscape character areas and landscape sensitive receivers assessed during baseline site survey

ID No.	Names
<b>Landscape Resources</b>	
LR1	Tsing Sin Playground
LR2	Roadside Planting along Tuen Mun Road Adjacent to Kam Fai Garden
LR3	Street trees along Castle Peak Road – Castle Peak Bay
LR4	Street trees along Tuen Mun Road west of Chi Lok Fa Yuen and east of On Ting Estate
LR5	Street trees along Tuen Mun Road west of Waldorf Garden and CMA Choi Cheung Kok Prevocational School
LR6	Street trees along Tuen Mun Road near Tuen Mun Town Plaza
LR7	Street trees along Tuen Mun Road east of Yan Oi Tong
LR8	Trees at roadside planting areas near Yan Oi Tong Circuit
LR9	Trees at planting area near Tuen Mun Town Plaza
LR10	Trees at planting area near New Town Mansion
LR11	Trees at planting area near On Ting Estate
LR12	Tsing Hoi Playground
<b>Landscape Character Areas</b>	
LZ1	Tuen Mun Residential Urban Landscape
LZ2	Tuen Mun Mixed Modern Comprehensive Urban Development Landscape
LZ3	Tuen Mun 'Hui' Urban Landscape
<b>Visual Sensitive Receivers</b>	
C/R1	Tuen Mun Town Plaza, Waldorf Garden
C/R2	Tuen Cultural Centre, Tuen Mun Town Plaza
C/R3	Chelsea Height
GIC1	Tuen Mun Church and Tuen Mun Tseng Choi Street Joint-user Complex
GIC2	Sin Hing Tong Temple
GIC3	Semple Memorial Secondary School and Chung Shing Benevolent Society Mrs. Aw Boon Haw Secondary School
GIC4	Car park (Open)
GIC5	Yan Oi Tong Community & Sports Centre
GIC6	Tuen Mun Government Secondary School, Choi Cheung Kok Secondary School

ID No.	Names
GIC7	Madam Lau Wong Fat Primary School, Lui Cheung Kwong College, Leung Kau Kui College, Lui Cheung Kwong Primary School, Wu Siu Kui Primary School
GIC8	Sam Shing Temple
O1	San Hui Playground
O2	Tsing Sin Playground
O3	Siu Lun Sports Ground
O4	Hoi Sin Playground
R1	Residential Area of Tuen Mun San Hui
R2	Residential Area along Yan Oi Tong Circuit
R3	On Ting Estate and Siu On Court
R4	Residential Area along Tsing Hoi Circuit
R5	Handsome Court, Alpine Garden, Hoi Tak Garden and Harvest Garden, Kam Fai Garden
R6	Siu Lun Court
R7	Goodview Garden and Tsui Ning Garden
R8	Sam Shing Estate
R9	Hanford Garden
T1	Tuen Mun Road – Vehicular and Pedestrian

Appendix G

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**Complaint Log**

**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section**  
**Complaint Log**

ET's Complaint Log Ref. no.	Incoming Complaint Ref no.	Name of Complainant	Date of Complaint receive	Complaint Date/ Period	Complaint Location	Area of Concern	Details of Complaint	Date of Complaint received by ET	ET's Investigation Date	Investigation / Mitigation Measures	Validity to the Project	Status
C037-TCS	A complaint was received by ICC on 29 Jun 13 and the Supervising Officer Representative was informed on 29 Jun 13.	Mr. Lee	29 Jun 13	Saturday evening time around 21:00.	Hong King Garden (Tsing Sin Street)	Noise	The complaint was related to noise nuisance of night works on Hong King Garden (Tsing Sin Street)	29 Jun 13	29 Jun ~ 11 Jul 13	<p>As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out in Hong King Garden (Tsing Sin Street). The noise nuisance was mainly caused by emergent maintenance and clearing work for concrete pumping truck.</p> <p>The original grouting work was supposed to be completed by 19:00pm. Due to the incident of breaking of concrete pumping pipes, EPD has been notified for the emergency work to clear the work area. The Contractor has enhanced the maintenance system of all concrete pumping trucks.</p> <p>Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.</p> <p>In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.</p> <ol style="list-style-type: none"> <li>1. Idle equipments should be either turned off or throttled down; and</li> <li>2. Improve the working practices to minimize the noise nuisance during the working activities as far as possible.</li> </ol>	Yes	Closed on 11 Jul 13

**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section**  
**Complaint Log**

ET's Complaint Log Ref. no.	Incoming Complaint Ref no.	Name of Complainant	Date of Complaint receive	Complaint Date/ Period	Complaint Location	Area of Concern	Details of Complaint	Date of Complaint received by ET	ET's Investigation Date	Investigation / Mitigation Measures	Validity to the Project	Status
C038-TCS	A complaint was received by ICC on 8 Jul 13 and the Supervising Officer Representative was informed on 8 Jul 13.	Mr. Ling	8 Jul 13	Friday Nighttime around 05:00.	Tuen Mun Road (under Yan Oi Footbridge)	Noise	The complaint was related to noise nuisance of night works under Yan Oi Footbridge.	8 Jul 13	8 Jul ~ 25 Jul 13	<p>As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out in Tuen Mun Road (under Yan Oi Footbridge). The noise nuisance was mainly caused by panel installation. On Friday midnight, 1 unit of aerial platform, 1 unit of crane lorry, 1 unit of drillers and 1 unit of welding machine have been deployed.</p> <p>The relevant construction noise permit (CNP) no. GW-RW0341-13 was obtained for the corresponding work in the designated area prior to commencement. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior to the work commencement. No abnormal activities were observed during the complaint period. Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.</p> <p>Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.</p> <p>In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.</p> <ol style="list-style-type: none"> <li>1. Well maintain the machines condition to minimize noise nuisance;</li> <li>2. Relocate operating machinery as far as possible from nearby sensitive receivers;</li> <li>3. Idle equipments should be either turned off or throttled down; and</li> <li>4. Improve the working practices to minimize the noise nuisance during the working activities as far as possible.</li> </ol>	Yes	Closed on 25 Jul 13